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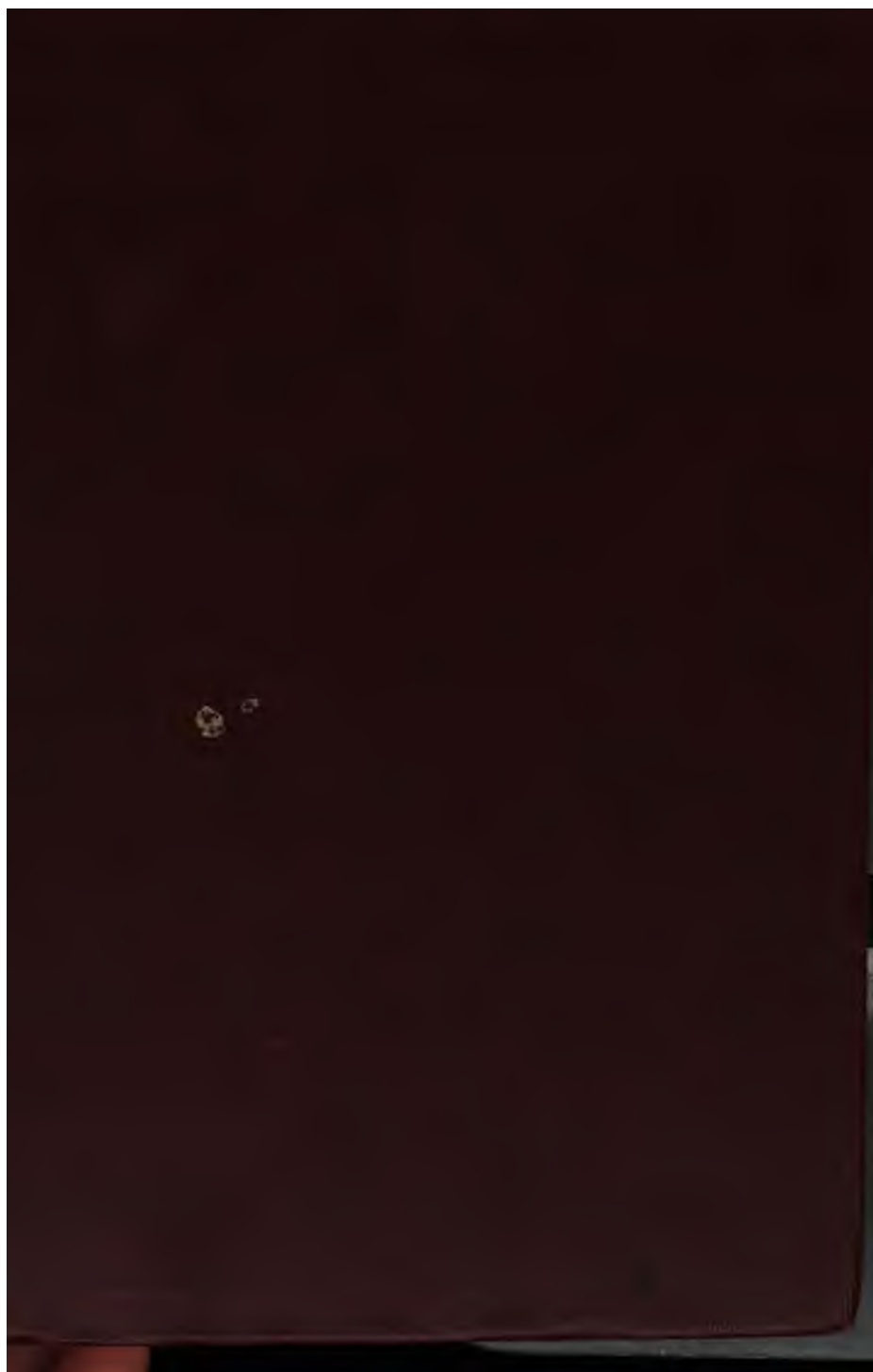
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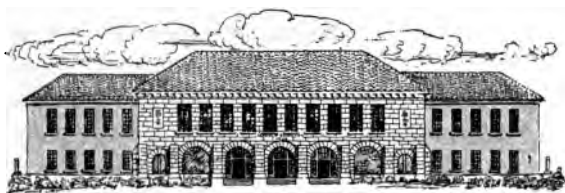
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EDUCATION FOR EFFICIENCY

A DISCUSSION OF CERTAIN PHASES OF THE
PROBLEM OF UNIVERSAL EDUCATION WITH
SPECIAL REFERENCE TO ACADEMIC
IDEALS AND METHODS

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PREFACE

OUR education has become practically universal so far as individuals are concerned, but it is far from universal with respect to interests represented in the courses of study.

The inclination of all people of all classes is to be educated. The recent and growing demand that the policy of this education shall be administered with at least some reference to the probable occupation of the student, and to the encouragement and development of the major activities, has raised new and fundamental questions as to the real purpose of education, the materials and the methods of instruction, and the organization and the administration of the schools to reach and serve a wider constituency.

These questions are not only new and puzzling, but their answer evidently involves some radical revisions of our hitherto educational standards. In any event, we cannot afford to err seriously at this juncture, for it is a juncture in our educational evolution, because the results of our decisions will be felt for all time not only in individual prosperity and happiness, but throughout the entire economic, social, and political fabric as well.

Among all the purposes that education may be expected to serve, it is perfectly clear that individual and community efficiency is paramount; and, moreover, that this efficiency is general, having equal application to the industrial and to the non-industrial, to the vocational and to the non-vocational.

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EDUCATION FOR EFFICIENCY

INTRODUCTION

THE RISE OF INDUSTRIAL EDUCATION

It was a great thing when the common man first lifted up his head and said, "I, too, will be educated."

WE have entered upon an era of universal education, which means the education of all sorts of people for all sorts of purposes. From now on therefore education must serve not only the exceptional five per cent but the ninety-five per cent of common men as well; it must not only fit for the so-called learned professions but it must also train for common things, else it is not universal, — a new fact that involves, I imagine, a somewhat radical revision of our philosophy of education, with a corresponding broadening of ideals as to the purposes, the materials, and the methods of instruction.

Fifty-seven years ago Professor Jonathan B. Turner wrote:¹

"All civilized society is, necessarily, divided into two distinct coöperative, not antagonistic, classes: a small class, whose proper business it is to teach the true principles of religion, law, medicine, science, art, and literature; and a much larger class who are engaged in some form of labor, in agriculture, commerce, and the arts. For the sake of convenience, we will designate the former the Professional, and the latter the Industrial, class, not implying that each may not be equally industrious, the one in their intellectual, the other in their industrial, pursuits. Probably in no case would society ever need more than five men out of

¹ From "A Plan for an Industrial University," United States Patent Office Report, 1832.

one hundred in the professional class, leaving ninety-five in every hundred in the industrial; and, so long as so many of our ordinary teachers and public men are taken from the industrial class, as there are at present, and probably will be for generations to come, we do not really need over one professional man for every hundred, leaving ninety-nine in the industrial class.

"The vast difference, in the practical means, of an appropriate liberal education, suited to their wants and their destiny, which these two classes enjoy, and ever have enjoyed the world over, must have arrested the attention of every thinking man. True, the same general abstract science exists in the world for both classes alike, but the means of bringing this abstract truth into effectual contact with the daily business and pursuits of the one class does exist, while in the other case it does not exist and never can till it is new created.

"The one class have schools, seminaries, colleges, universities, apparatus, professors, and multitudinous appliances for educating and training them for months and years, for the peculiar profession which is to be the business of their life; and they have already created, each class for its own use, a vast and voluminous literature, that would well nigh sink a whole navy of ships.

"But where are the universities, the apparatus, the professors, and the literature, specifically adapted to any one of the industrial classes? Echo answers, Where? In other words, society has become, long since, wise enough to know that its teachers need to be educated, but it has not become wise enough to know that its workers need education just as much. . . .

"It is said that farmers and mechanics do not and will not read, but I say, give them the literature and the education suited to their wants, and see if it does not reform and improve them as it has reformed and improved their professional brethren. The agricultural classes have no congenial literature."

In these few words Professor Turner outlined both the need for education and the character of the education suited to the natural needs of industrial people. They were written in the early days of the campaign that led up to the Land Grant Act of 1862, by which every state has come to have at least one college wherein are taught the subjects that

especially pertain to industrial life, but "without excluding other scientific and classical studies."

This was the first far-reaching step in this country toward an adequate system of education for industrial people *as such*. Hitherto, to be sure, the colleges had been open to young men from the industrial ranks, but the courses were adapted to the special needs of Professor Turner's five per cent and were silent upon those of the ninety-five.

If, therefore, an ambitious young man from the industrial masses perchance entered college to better his condition, the inevitable consequence was that he deserted the ninety-five and joined the five per cent, whereby the industrial masses remained uneducated and the industries undeveloped and tending downward as the result of universal education, because educational influences were such as to abstract from the industries the most ambitious and the most capable.

This draft was felt hardest upon the farm, when the great commercial activity following the Civil War drew by thousands the best blood out of the country into the city; off the land and into the office; away from independence into dependent positions with small salary.

The Land Grant Act was the first step in the correcting of these evil tendencies, in that agricultural and mechanical instruction of some sort was provided in every state in the Union. It was followed twenty-five years later (1887) by the Hatch Act, founding at every agricultural college an Experiment Station for the investigation of problems peculiarly agricultural and for the publication of the results.

Thus came to be built up, on the agricultural side at least, the literature of which Professor Turner so clearly saw the need. This also strengthened the instruction in the college, and agricultural as well as engineering colleges

in these land-grant institutions were soon filled with students. Thus industrial education became established in this country, and first of all on college levels. It yet remains to be established for the real masses, and the most important educational question to-day is how to inaugurate an adequate scheme of industrial education of *secondary grade and below* in order to be within the reach of at least the greater part of Turner's ninety-five per cent. This question has not yet been settled, and it is the conviction of the writer that as yet we have not evolved a philosophy of education adequate to the task of meeting the logical demands of a real system of universal education.

Gradually, but slowly, men have learned by experience that schooling, if it be of a suitable kind, does not necessarily educate away from industry, and further, that the kind of education which fits for industry not only returns educated men to industrial life but also and inevitably *develops the industries* to a level that is unattainable except through education.

It was far-sighted educated men like Turner in the West and McAllister, Gregg, Cameron, and Morrill in the East that first saw and pointed out the need of industrial education. For a long time the people were apathetic or resistant. They desired education; indeed they demanded it, but it was for the purpose of "rising above" the ordinary walks of life. They chiefly desired education not as a source of personal gratification or of added efficiency in service, but that they "would not have to work so hard as their fathers did," and for a generation or more education was regarded as the avenue out of industry and into an "easy place"; out of humble life into elegance and prominence.

Accordingly, the first attempts at industrial education,

even when endowed by federal support, were met by anything but promising results. The only people who supported the agricultural colleges were the few who really desired their sons to be educated, but had learned by observation that the old-line college courses educated away from the farm.

From the first, the attempt to teach industrial courses was attended by peculiar difficulties. As Turner had remarked, there was no literature. There was lacking, therefore, both material and method, and it would take a book simply to record the academic blunders and the professional shortsightedness that characterized the first quarter of a century of this attempt. Teachers were as lacking as was appropriate literature, and these have had to be developed by the slow evolution of internal processes, because we have beheld the unparalleled prospect of a generation of self-made teachers evolving with their own experience both the matter and the methods of an entirely new educational field.

Quite naturally the first attempts at teaching were little more than an effort to train in handicraft, developing the art side of industries in imitation of the obsolete apprentice system, and it has taken a generation of experience to teach us that what is needed in industrial education is not so much the art as the science of the craft; not so much the practice as the principle, which only is educative, and on which only the industry and the man can be developed together.

Harassing and full of delay as all these troubles have been, we have gradually learned two fundamental facts; viz. first, that the industrial man is the better for being *suitably* educated; and second, that industry develops with that sort of education of industrial people which retains

them among the industries and does not drive or lead them out. Agriculture, like engineering, is rapidly becoming more difficult, and in many of its phases has already passed beyond the compass of the uneducated.

We are gradually learning, too, that it does not pay to try to hold *individuals* either within or without the bonds of industrial life, but that it is the best public policy to leave nature alone in this respect and let the individual decide his own destiny after a fair opportunity for choice of occupation.

With a feeling of confidence established at these points, the demand for industrial education as such is strongly felt and is now becoming surprisingly general, so general as to amount to a demand that must be reckoned with, and that at once. This demand takes one or the other of two forms: either that industrial schools shall be more generally established, or else that industrial courses shall be added to the curricula of existing schools. Which one of these two demands to recognize is the most difficult of all questions for educators to solve, because in its solution we must look, not so much to the present situation as to future conditions and the ultimate consequences of the plan that finally shall be adopted.

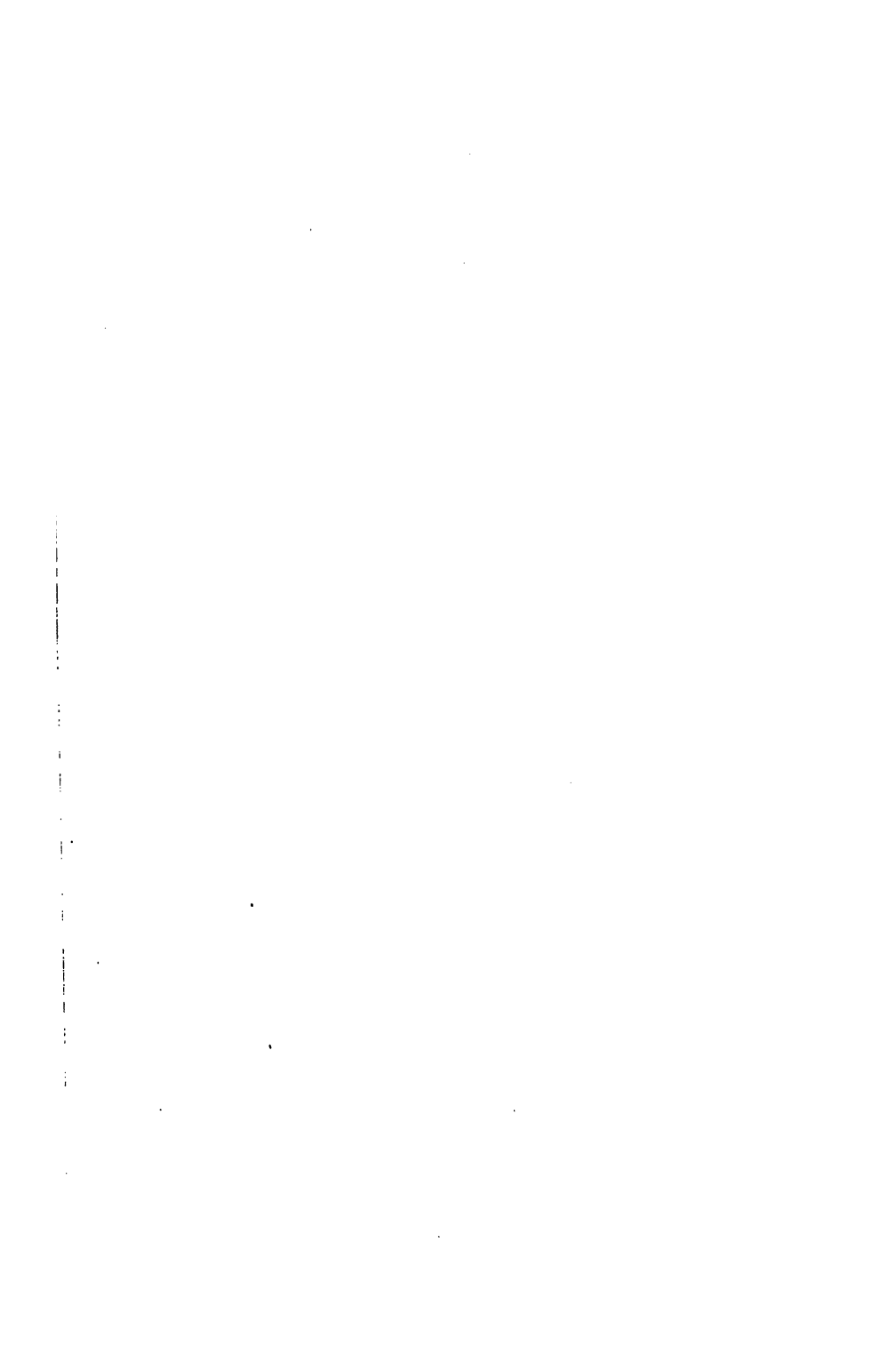
With the rise of industrial education new meaning has been given to industry and new dignity to that kind of labor which is a necessary part of a logical plan looking to the accomplishment of definite ends, all of which adds to the significance of this form of education and still further augments the demand, until our whole scheme of education is on the point of revision.

Some good people, conservative to a fault, look upon these educational innovations with extreme disapproval, marking, as they believe, the passing of old-time high

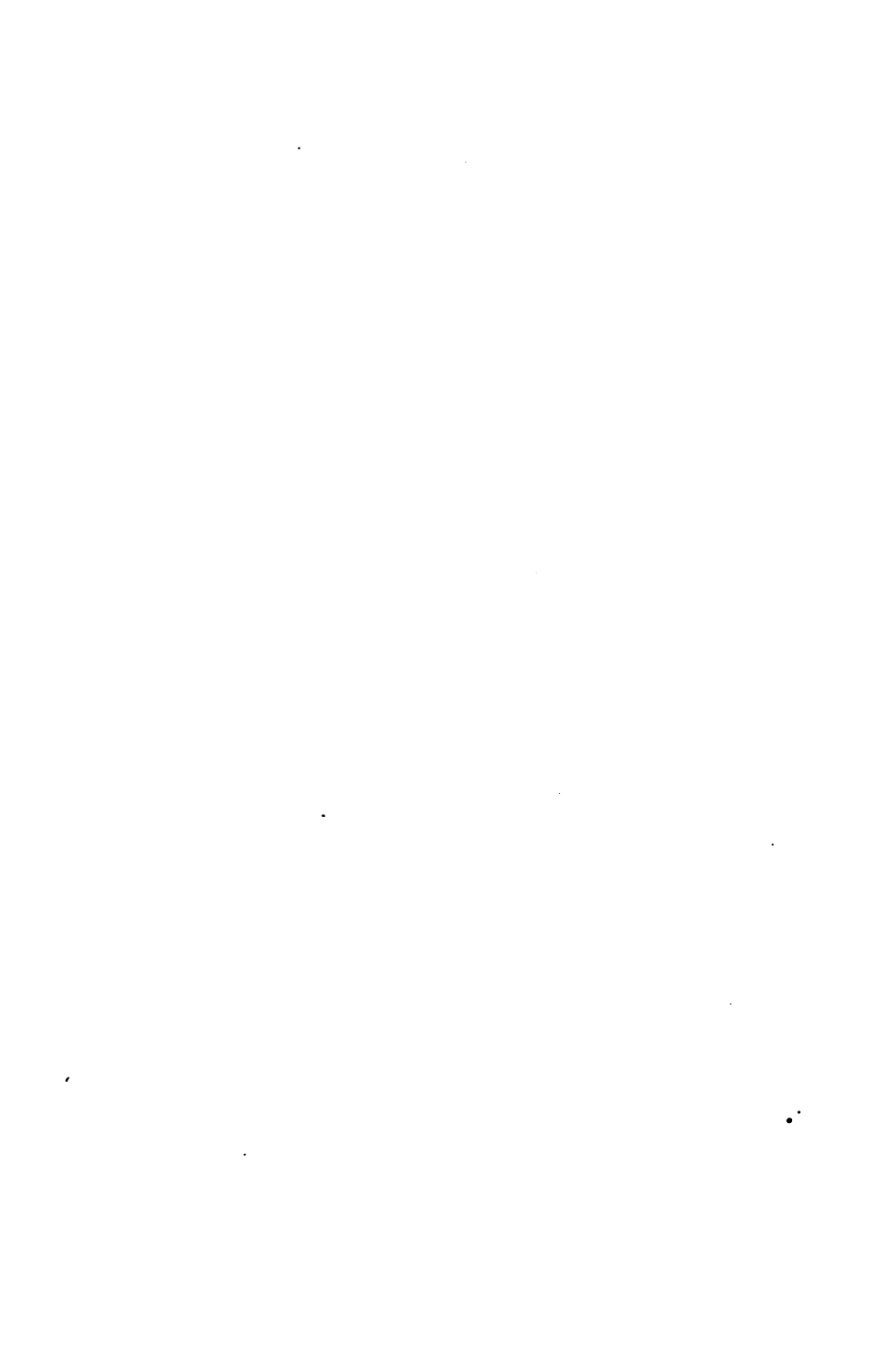
standards of the educated man. Others, noting the immediate and direct value of technical instruction, are ready to jettison the ship and cast overboard as useless junk not only every ancient language because it is "dead," but any and every other subject that does not clearly and directly contribute to utilitarian ends, on the ground that it is not practical. As the one side pursues its educational ideals, oblivious that men are beings of flesh and blood to be fed, clothed, and housed, so the other forgets that the chief end of man is not merely to meet his physical necessities. Both sides are likely to consider only the present good of the individual and overlook the ultimate effect of an educational system upon the community as a whole.

Where, now, between these two extremes shall we find the golden mean, by observing which we shall have a new philosophy of education adequate to minister to all the needs of man? What is the fountain at which all may drink freely, to the advantage not only of the individual but of the race? To answer this question safely will require the keenest insight into present conditions and the most prophetic vision as to future consequences of whatever policy shall be adopted.

The following pages are offered as some slight contribution to the thought that must be bestowed upon the matter before the problem of universal education shall be so solved as to serve fairly and safely both the five and the ninety-five per cent.



PART I



CHAPTER I

EDUCATION FOR EFFICIENCY¹

It is dangerous to attempt to educate a live boy
with no reference to the vocational.

THE first general principle to be recognized is this : That industrial education cannot be considered by itself alone any more than industrial people can live alone. It is at best but part of a general scheme of education that aims at a higher efficiency of all classes of people, and it is in this light that industrial education should be studied and its problems solved.

The most significant educational fact to-day is that men of all classes have come to look upon education as a thing that will better their condition ; and they mean by that, first of all, something to make their labor more effective and more profitable ; and second, they mean something that will enable them to live fuller lives. They have no very clear idea of the methods for bringing it all about, nor have they any very good means of impressing their views and desires upon us at educational conventions ; but to better their condition through education is the abiding faith and purpose of all men everywhere, and they will persist until it is realized.

The ruling passion of the race to-day is for education ; and colleges and schools of all sorts, both public and private,

¹ This chapter covers the general line of thought developed by the author in an address at the dedication of the new agricultural building at the University of Tennessee, Knoxville, May 28, 1909.

day classes and night classes, winter and summer, are filled to overflowing. The only educational institution that is being deserted is the old-time district school, and that is failing only where it is unable to satisfy the new demands, and where this occurs its lineal successor is the public high school, which is everywhere becoming the favorite agency of modern education of the masses in America.

The training of the young for the duties of life is no longer left to the charity of the church nor to private endowment, however munificent. We do not ask a man to pay the expense of his own education, and we no longer require the parent to pay for the schooling of his child. We have come to recognize that in the last analysis the child belongs to the community, and public welfare requires that he be educated. So we have the policy of universal education well established among us and the largest item of public as well as of private expense is for schools.

Now this is not sentiment, it is business ; it is not charity, it is statesmanship. We propose to maintain all sorts of education for all sorts of people, and to keep them in school as long as we can—so far have we gone already in this worship of the idol of our day and time.

Yes, truly the ruling passion of the race is for education. Individuals would amass wealth ; individuals would exert influence and power ; individuals would live lives of luxury and ease, but the common purpose of the masses of men from all the walks of life is a set determination to acquire knowledge. Daughters of washerwomen graduate from the high school, and ditchers' sons go to college—not by ones and twos, but literally by hundreds and thousands, and if the ruling passion fails in individual cases, we have a law that puts the child into school, *willy-nilly*, on the ground that to this extent, at least, he is public property.

Now what is to be the consequence of all this? What will the daughter of the washerwoman do after she has graduated from the high school? Will she take her mother's place at the tub? What think you? If not, how will the washing be done? and was her schooling a blessing or a curse to the community? — because the tub must stay; and if she does take her place at the tub, was her schooling a blessing or a curse to her? Will the ditcher's son inherit the father's spade? and if not, how will ditches be dug if all men are to be educated? How will the world's work get done if education takes men and women out of useful and needful occupations and makes them over into *pseudo* ladies and gentlemen of leisure? How, too, will their own bills be paid except they labor as men have always labored? It is idle to say that a portion of the race should be left ignorant that they may perform the undesirable though necessary labor. The "portion" objects, and what are we going to do about it? Now these are disagreeable questions, and we would rather not be forced to answer them; but they are fundamental, and will soon begin to answer themselves in some fashion under our system of education, which is rapidly becoming universal.

We are now engaged in the most stupendous educational, social, and economic experiment the world has ever undertaken — the experiment of universal education; and whether in the end universal education shall prove a blessing or a curse to us will depend entirely upon our skill in handling the issues it has raised for our solution. We have entered too far upon this experiment ever to retire from it, even if we desired to do so, which we do not; and if the outcome is to be safety and not anarchy, and if it is all to result in further development of the race and not in retrogression, then a few fundamentals must soon be clearly recognized

and brought into and made a part of our educational ideals, policies, and methods.

First, if we are to have universal education, it must contain a large element of the vocational, because all the needful activities must be maintained in the educated state as heretofore. The race cannot progress any more in the future than in the past except by the expenditure of large amounts of human energy. This being so, education cannot be looked upon as an avenue to a life of ease, or as a means of giving one man an advantage over another, whereby he may exist upon the fruit of that other's labor and the sweat of that other's brow. It might do for a few; it cannot do for the mass, whose efficiency must be increased and not decreased by education; because in the last analysis education is a public as well as a personal matter, and the interests of the state require that the ratio of individual efficiency in all lines shall be constantly increased.

Second, within the limits of needful activities one occupation is as important as another, and a system of universal education must enrich them all, or the end will be disastrous. We need to change our views concerning what have been regarded as menial employments. In the millennium no woman will make her living over the wash-tub, nor will she sing the song of the shirt day and night forever; but neither will education and elevation free her, or any one else, from a fair share of the drudgery of life, because the needful things must still be done. Nor must we fail to remind ourselves that not all the labor of the world is at the washtub, or at the bottom of the ditch, because success in any calling is the price of unremitting and exhausting toil, against which education is no insurance whatever. It can only promise that faithful labor

shall have its adequate and sure reward. And that is enough, for no man has a right to ask that he be freed from labor on this earth; he can only pray to be relieved from the burden of aimless and fruitless drudgery — which is the blessed assurance of education.

While education is no relief from labor, or even drudgery, it ought, however, to lessen the totality of drudgery by the further utilization of mechanical energy and the more economic and intelligent direction of human effort. Education will never fully justify itself until this shall have been accomplished and the human machine be liberated from the last form of slavery — the drudgery that is born of ignorance.

No man, then, educated or uneducated, has a right to be useless. Most men will continue to earn and ought to earn, in one way or another, the funds to pay their bills, and in this natural way will the world's work get done in the future as in the past. The education of all men, therefore, is, or should be, in a broad sense vocational, and the so-called learned professions are but other names for developed industries. In this broad sense every useful activity is included, from farming to music and painting, poetry and sculpture; from engineering to medicine and law, philosophy and theology; as wide and as varied as the activities and capacities of the human race — so wide and so varied must our education be if it is to be universal and be safe.

Measured by this standard, farming has the same claims upon education as have language and literature, but no more; for both are useful, or may be, though in different ways. Which is more useful we cannot tell any more than we can tell whether food or religion is the more essential to human life; or whether art or industry contributes most

to its fullest development. We only know that all things within the range of human capacity are useful, and that education may, if it will, enrich them all.

Now this demand is right, for, unless universal education can be so administered as not greatly to disturb the relations of needful activities, it will prove in the end a curse instead of a blessing, and it is the business of educators now soberly to consider the consequences of headlong policies, however promising in direct results, if they do not reckon with the inevitable outcome.

Third, in the working out of these plans such policies and methods must be observed as shall prevent social cleavage along vocational lines. Unless we can do this, democracy will, in the end, fail. We cannot go on with one half of the people educated and the other half ignorant, any more than we could live with one half free and the other half slave. No more can we live with one half educated to one set of ideals and the other half to another. If we attempt it, we shall have, in due time, not civilization—but a tug of war between highly educated but mutually destructive human energies. The only safety for us now is in the education of all classes to common ideals of individual efficiency and public service along needful lines and with common standards of citizenship. To this end the individual must have training, both vocational and humanistic, and it is better if he does not know just when or how he is getting either the one or the other.

Fourth, remembering that what is one man's vocation is another's avocation, and that what is technical and professional to one is humanistic to another; remembering that all study is educational and that utility does not lessen its value; remembering, too, that much of our education comes from association and that the best of it comes in no other

way — remembering all these and many other considerations well known to the thinking man, we must agree that *in a system of universal education the best results will always follow when as many subjects as possible and as many vocations as may be are taught together in the same school, under the same management and to the same body of men.* In no other way can a perfectly homogeneous population be secured. In no other way can universal efficiency be so closely combined with good citizenship. In no other way can activity and learning be so intimately united. In no other way can morals and good government be so safely intrusted to a free people.

As I see it, the greatest hindrance to the natural evolution of a single system of schools adapted to the education of all classes of our people is academic tradition which needs substantial modification in a number of important particulars.

The truth is, there is no such thing as a “general education,” except one that fits for nothing in particular, leaving the possessor stranded without occupation or other field for the exercise of his trained activities. In so far as this type of general education exists among us, the quicker we abolish it the better. For example, it has been fashionable to speak of the courses in the arts and sciences as “general,” “non-technical,” or “liberal,” using the terms synonymously, and as opposed to the technical or professional.

Now this is inaccurate and leads to much confusion of mind. Courses in the arts and sciences are not by nature general and non-technical, because an examination of the facts will discover that most of the students taking those courses in colleges are taking them for professional purposes in preparation for definite careers, generally

teaching ; possibly banking, railroad administration, or the business of an analytical or manufacturing chemist or some other gainful occupation. That is to say, the courses in the arts and sciences are mostly taken as professional or vocational courses the same as are those in engineering and agriculture.

The best evidence of this erroneous use of terms is that those who make most of the distinction between the technical and the non-technical courses ; those who talk most about the latter being liberal as distinct from the former ; those who outcry loudest against commercializing education are teachers themselves, who are earning money like farmers. Now by what rule do we adjudge that farming is a calling and teaching a profession ? that engineering is industrial and journalism liberal ? that courses fitting for farming are technical and narrow, and those fitting for teaching or making chemical determinations are general and liberal ? The truth is they are all alike vocational ; they are all professional ; they all open avenues whereby men and women earn money to pay their bills, and ninety-nine out of a hundred of those who are good for anything in any and all these courses are taking them for the same purpose, viz. to afford a congenial field of activity whereby the individual may become a worthy and self-sustaining member of society.

The truth is that the distinction between the technical and the non-technical, the professional and the non-professional, the narrow and the liberal, does not inhere in courses of study leading to graduation, for the same subject may be either the one or the other according to the point of view of the student and the purpose for which it is taken. For example, chemistry *per se* is neither technical nor non-technical, narrow nor liberal. It is a great

field of science. As explored and studied by an agricultural student, or by one who proposes to make his living as an analytical or a manufacturing chemist — to them it is a technical subject, while to the student of literature it becomes a non-technical and therefore a liberal subject, because it liberalizes him and broadens his outlook upon the world and helps to connect him with the farmer and manufacturing chemist. To the prospective teacher it becomes technical or non-technical; vocational or non-vocational, according as he proposes or does not propose to teach it. To the farmer, chemistry is a technical subject, and literature and history non-technical, and therefore liberal. To the teacher of history, conditions would be reversed.

+ | Another academic reform is to get over our horror of the vocational. The old-line courses were as distinctly vocational to the learned professions as are the newer courses to the industrial occupations. The services of education to the industries of life and the ordinary occupations of men have been so recent that final adjustments are not yet made. We are only gradually beginning to learn that every useful man, educated or uneducated, has a calling and that the line between the technical and the non-technical, between the narrow and the liberal, runs across individuals, not between them. *Every properly educated man is trained both vocationally and liberally*, but one vocation is not necessarily more liberal than another except as the practitioner makes it so. To succeed in any calling requires the possession of a body of specific knowledge relating directly to that calling, mostly useless professionally to one of another calling, but far from useless as a liberalizer.

Every man, to be efficient, needs the vocational; to be

happy and safe he needs the other. John Bessmer was a barber and made his living by his scissors, but meteorology was his avocation. He was the best barber I ever knew, but he talked most about meteorology. The ditcher will not ditch all his waking hours. What will he think about when he is awake and not in the ditch? Then is when his avocation, the liberal part of his education, is his comfort and our safety, for the mind is an unruly member, and if the man has no training beyond his vocation, his intellect is at sea, without chart, compass, or rudder, and the human mind adrift is a dangerous engine of destruction.

It is well that we who are bent most upon industrial training and development do not forget these considerations, and in our enthusiasm for technical instruction we see to it also that every individual has a fair share of the liberal as well, for the chief distinction of the educated man is, after all, his ability to view the world from a standpoint broader than his own surroundings.

Another relic of academic ancient history that ought to be eliminated is that habit of thought which runs in the form of set courses of study four years long. This habit of thought has stood in the way of the proper and adequate development of agriculture in our colleges, and it is now standing in the way of high-school differentiation and the development of industrial courses therein.

For example, it has been assumed without discussion that a student desiring instruction in agriculture must enter upon a set course for four years, and that unless he graduated he had somehow failed, or the course was too long. It never seemed to occur to our educational fathers and grandfathers that perhaps the course was not adapted to his needs any more than it seems to occur to some of our contemporaries that men go to school to study *subjects*, not

set courses, and that the benefits of our instruction are by no means confined to those who graduate.

There is nothing sacred about four years, or about a particular association of subjects. We must get over our fetish worship of what we call a "course of study" and bestow our attention upon "courses of instruction." Our somewhat uniform failure to do this has been responsible for much special and unnecessary limitation in the subject of agriculture. Let me illustrate: A good friend some months ago asked me this question: "Why do you not have a two-years course in agriculture in the University of Illinois?" I replied by asking, "Tell me first why do you have one in your university?" He replied, "Because many young men cannot, or will not stay, for a four-years course." And I said, "Then of course you have also two-year courses in the arts and sciences, and in engineering?" And he said with an elevation of the eyebrows, very significant, "No, of course not." Then I said, "Why not? Do all or most of your students in the other colleges remain and complete four-year courses?" He had to answer, "No, not a third of them." I think I had answered his question, but to make sure I said, "When the other colleges of the University of Illinois find it necessary or desirable to put in two-year courses because not more than one student in three or four stays to graduate, then I suppose we shall do the same; but until then I think we shall continue to teach *subjects* to those who come, and bestow honors on those who have earned the usual amount of credit." Here is a good illustration of our futile efforts to hammer a new subject into line with ancient academic custom, as if graduation from something, even a two-years course, were the chief end of the schooling process.

This same old habit of thought is the bane of the high

schools to-day in their effort to serve the people. Many of them consider the limit reached when a four-years course is offered, made up largely out of old-line subjects with little or no reference to local needs, and when we talk about instruction in vocational subjects they remind us that the "course is full." This mistaken attitude on the part of too many high school men will do more than all other causes combined to force upon us a multitude of separate technical schools and destroy the opportunity of the high schools forever, because men are as firmly bent on vocational education of a secondary grade to-day as their fathers were bent on industrial education of collegiate grade half a century ago. The same forces are at work in high schools now as were at work among colleges then, and the issue will be the same. Either the high schools will expand and teach the vocational, or other schools will be established that will do it.

One good friend whom I greatly honor, because he is many years my senior, and many degrees my superior in every sense, writing me on this point, said in substance: "Your idea that all subjects needful to the life of the community should be taught in the same school is fine in theory, but how are you going to get it all into the course, and what shall be *left out*?" Aye, there's the rub! How get it into *the course* and what shall be *left out*? How this instinctive attitude of mind clings to us academic people! It is not much found except among professional educators, and with them it is one of the relics of academic ancient history, dating back to the time when the college provided a set course for all students and which, when full, was *full* in the same sense that the jug is full.

Recently the colleges have learned the lesson of the tremendous complexity of modern demands, and they are be-

ginning to realize something of the depth and breadth of the meaning of universal education ; at least that it means the education of many men for many things and by means of various materials and methods. This involves many courses in one school. It requires that colleges teach subjects rather than set courses ; and nothing is full so long as any branch of knowledge and activity remains undeveloped and men and money hold out. The colleges have learned this ; it is also the lesson for the secondary schools ; indeed, in a very large sense the land-grant university is the model for the public high school.

Our children look to the schools to fit them for the many duties of life. Let them not be disappointed. To this end we must construct such educational policies and employ such materials and methods as shall make the school a true picture of life outside in all its essential activities. To accomplish this we must introduce vocational studies freely, not for their pedagogic influence but for their own sake and for the professional skill and creative energy they will give the learner. We must do this, too, without excluding the non-professional either from the school or from the individual.

Take a specific instance outside of agriculture, but one which is typical of thousands of cases. There are many good families whose daughters feel the need of earning some little money during years of young womanhood between the school age and matrimony. They are good typical American girls, worthy the love and the service of any man, and sometime the hero will come. In the meantime, what ?

We will suppose that the girl in question looks with favor upon stenography and typewriting as a congenial employment. Now I put the question flatly, remembering there are many like her in the same community, — shall

the high school put in courses of typewriting and stenography which she may take in *connection* with her humanistic studies and her domestic science which she will one day need?—for this typical girl is, or should be, a prospective wife and mother. Will the school do this? or will it force her to leave her high school in order to get elsewhere this vocational training which she thinks she must have, because of temporary needs, and which the high school will not give her lest it should be suspected of commercializing education?

I am thankful that many high schools are already putting in vocational courses. May their numbers increase. It is far better to hold this girl in the high school and teach her also the things she will one day need much more than she will then need her stenography and typewriting, — it is better for her and it is better for the community than it is to force her, in early years and under the exigency of immediate needs, to abandon the greater for the less. Yes, it is better to take stenography and typewriting, telegraphy and bookkeeping into the high school than it is to drive our girls out of it even into the night schools. A proper policy at this point will save to American wifehood and American homes thousands of bachelor maids and factory girls, and do more to reduce the ratio of divorce than any other civilizing force with which we hold acquaintance.

What is true of many girls is doubly true of most boys. If they are good for anything, the impulse to be doing something definite takes hold of them early, and the only way to keep a live boy in school or to make him good for anything after he leaves it is to be certain that some portion of his curriculum relates directly to some form of business activity outside. *It is dangerous to attempt to educate a live boy with no reference to the vocational.*

The trouble has been in the past, and is yet, that our courses of instruction have been too few. We have not sufficiently distinguished between what a single individual could take and what the community as a whole ought to know. Accordingly, men seeking education have found much of the subject-matter and of the method grossly unsuited to the uses they hoped to make of it, and have either left the school, sacrificing their broader opportunity, or have stayed to the sacrifice of their efficiency.

The universities have been first to recognize this fact and to meet it. With the best of them there is no thought of a set course which every individual must take, but rather the aim is to offer instruction in as many as possible of the branches of knowledge that interest and profit men. The result is that in these institutions few men are taking courses with a fixed sequence, but each is after the instruction which will best fit his needs, and often two men take the same subject side by side with a very different purpose and from a very different point of view.

Now the efficiency of modern university education, especially along new lines, is becoming notable, and institutions conducted upon this plan are overrun with students seeking definite instruction for definite purposes, all of which indicates the educational policy that best meets the needs of the people. Here is the cue to the general plan that should characterize the high schools, upon which educators ought to bestow some degree of special attention, because it is in the secondary schools and not in the colleges that the American people will mostly be educated.

A third particular in which we need academic reformation is this: Not only college courses, but high school courses, as well, are planned and conducted almost solely in the interest of the few who graduate, with but little ref-

erence to the masses who drop by the wayside. If our system of education is to achieve the highest results, it must recognize the natural difference in men, both qualitatively and quantitatively, and while it trains the brightest and best for the positions of most responsibility and therefore of honor, it must so shape its policy that those who for any reason cannot, or do not, remain to the limit of time, or whose academic ability is mediocre shall drop naturally into useful places for which their little schooling has somewhat definitely prepared them. Thus will our human flotsam and jetsam be lessened, and thus shall we become more homogeneous as a people. Thus too shall we be consistent, for does not our education aim to be universal?

Our high schools, or rather their constituency, are suffering cruelly at this point to-day. The chief object in too many ambitious schools is to get on the accredited list of as many universities as possible, graduate as many students as may be, and get them into college. So intense is this purpose that in too many instances the course of study and the methods of work are inadvertently but largely shaped in the interest of those who are to graduate, though we know only too well that their ratio is small, and that of those who go to college it is still smaller.

It is time the high schools served the interests of their community first of all; and if they will do that thoroughly, the colleges will manage to connect with them on some terms mutually satisfactory. If that is impossible, then let the high school faithfully discharge its natural functions to the community that gives it life and support, and leave adjustments to the universities. The few who go beyond the high school will be abundantly able to take care of themselves *if only their training has been thorough*, and they have learned habits of efficiency. I protest against

the reduction of the American high school to the basis of a college preparatory school, unless it is first built upon what is a rational education for the masses of men. We have no right to reduce, impoverish, or distort the educational opportunity of the great mass of people who depend, upon the high school for their only education, in the interest of the few who go to college.

We are nearing the time when for various reasons we shall revolutionize our secondary education as we have already revolutionized our college standards. We shall offer many courses of instruction in many subjects, some vocational, others not; some vocational to certain students, not so to others, and all in the same school. We shall not be on sound ground in this matter until things are so fixed that when a boy or a girl comes into contact with our school system at any point, even for a short time, he or she will at once and of necessity strike something *vocational* and *also* something *not vocational*; to the end that, however soon the student leaves the system, he will carry out into life at least something which will make him more efficient at some point, and also more cultivated, because the schools have taught him something of actual life, not only in the abstract but in its application.

The greatest trouble with our educational system to-day is that it is laid out too much on the plan of a trunk line railroad without side switches or way stations, but with splendid terminal facilities, so that we send the educational trains thundering over the country, quite oblivious of the population except to take on passengers, and these we take on much as the fast train takes mail bags from the hook. We do our utmost to keep them aboard, to the end, and we work so exclusively for this purpose that those who leave us are fitted for no special calling, and drop out for no special

purpose, but roll off like chunks of coal by the wayside — largely a matter of luck as to what becomes of them. I would reconstruct the policy of the system by making all trains local, both to take on and *leave off passengers*; and I would pay much attention to the sidings, and the depots, and their surroundings at the way stations, to the end that those who do not complete the journey may find congenial surroundings and useful employment in some calling along the line. I mean by this that while vocation should be neither the end nor the means of the educational process, yet it should be its inseparable concomitant. This is education for efficiency and service, whether it ever earns an academic degree or not.

We need not fear real education for real efficiency, but we may well tremble when we see a whole people gorging themselves with a mass of knowledge that has no application to the lives they are to live, for this will breed in the end dissatisfaction and anarchy. The best illustration of this educational short-sightedness is the fondness of many a classically educated colored brother for Latin, Greek, and Hebrew, not so much for what they can do for him, or help to do for himself or others, as because the acquisition of language is a pleasant exercise and its possession a satisfying novelty. Fortunately Booker Washington and Tuskegee are in the land, but unfortunately our educational blunders are not limited to the colored race. It is a notable and perhaps significant fact that a very large proportion of the tramps of the country have had the advantages of our schools.

Another point at which our minds are in danger of wandering far afield is in regard to the natural function of the secondary school. The American high school is a new institution, and like all new institutions it lacks ideals and

methods. It has displaced, in the West at least, the old-time academy whose function it was to fit for college, The high school, lacking models, has followed very largely and quite naturally the plan of the academy whose mantle it has inherited. In this it has erred. *The modern high school is not the lineal descendant of the old-time academy, and its primary function is not to fit for college. It is a new institution, and its function is to educate its natural and local constituency for the duties of life. It is as thoroughly a public institution as is the state university, and it should serve its community in the same way and with the same spirit that the university serves the larger and more complex unit.*

It is the first business of the high schools to serve the public needs directly through the masses of men and women who constitute their natural constituency, not indirectly through the colleges. Their service to education and to civilization is primary, fundamental, and direct, not secondary and preparatory. Nor in saying this do I reflect upon the great work of our institutions of highest learning; far from it. No man can exceed me in admiration of the supreme service of the colleges and the universities of the country, but that supreme service must be rendered without overshadowing, distorting, or injuring that other service, which, after all, is more direct, reaches a larger number, and without which the influences of the colleges and universities will be largely dissipated and lost.

If the existing high schools will earnestly address themselves to this great duty, they will become, next to the church, the most powerful educating and elevating agencies of our civilization; but if they do not, then as sure as time passes another system of schools will arise that will do it, and the time will not be long hence until they will

divide the field with technical schools and play a losing game of chance with them. The first independent schools will be trade schools in the cities and agricultural schools in the country, and this lead will be followed by others until we shall have a whole system of vocational schools of all conceivable sorts; and the high schools will be stripped, first of one opportunity to serve their constituency and then of another, until their usefulness will be lessened, if not entirely destroyed in the eyes of the people, who alone can support them, and they will be relegated to girls' schools and training schools for college admission.

This is no fanciful picture, and I am convinced that unless we are quick to read and heed the handwriting on the wall to-day the next decade or two will witness the permanent decline of the high school under the onslaught of the multitude of independent vocational schools that will spring up everywhere and which will seem to serve well because the service is direct and plainly useful. The only great future for the high school is to add vocational work, making the separate technical school unnecessary, if not impossible. If they will do this, their future and their service are assured; but if the people find it necessary to establish another system of secondary education as they did a new system of collegiate grade, then they will do it; but if they do, they will certainly insist upon a fair division of the revenues, because modern high schools are not private institutions as were the old-time colleges; they are in every sense of the term public institutions.

Experience in university circles has shown that the separate professional college was necessary in the past only because of the indifference to new demands of the institutions then existing. As soon however as the universi-

ties seriously set about studying the new problem from their own standpoint it was found that there was really nothing incompatible between the old and the new ideals, but rather that it took the two together to make a complete system of education, and where the two have been already joined, — the professional and the cultural, the industrial and the humanistic, — there has education flourished best in the last decade; there is the educational impulse strongest to-day, and there, if wise counsels prevail, will develop in good time the greatest educational strength and creative power of this most virile of people; not only along industrial lines, but along artistic and humanistic lines as well.

If the high schools make the most of their opportunity, they will develop into a great system capable of training the masses of our people not only industrially but for all the duties of life, and in a way that can never be equaled by any multiple system of separate vocational schools, however well established and conducted. One school with many courses, not many schools with different courses — that is the plan for American secondary education. Such a school would be large enough and strong enough to afford an excellent education within walking or driving distance of every young person — an ideal not attainable by any system of separate schools that can ever be established. I have unlimited faith in the final development of the high school, and cannot condemn in terms too strong a pessimistic or a carping spirit toward this new and remarkable system of education at the very doors of the people; and I cannot oppose too strongly any and all influences that tend to make its proper evolution either impossible or more difficult.

We must not underrate the importance of the average

citizen, either to himself or to the community, for the common man with an opportunity is a common man no longer. If we would know what a community of common people can do when it addresses itself seriously and *en masse* to a single purpose, consider the success of that little German village in breeding canaries, marvel upon the achievements in the Passion Play at Oberammergau, or even the singing of the Messiah in that little Swedish village of Kansas, as described in a recent *Outlook*.

Remembering what the common man may do, with proper ideals and advantages, there is no higher duty now resting upon all of us, and especially upon educators, than to unite education and activity by the closest possible bonds, to prevent on the one hand the acquirement of knowledge to no purpose, and on the other the development of operative skill with little knowledge of the true relations of things; to see to it that no individual shall be compelled to choose between an education without a vocation, and a vocation without an education. This supreme responsibility rests heavily upon every American community just now, and in our enthusiasm for education that is useful it is well if we temper our enthusiasm with judgment and keep always in mind the fundamentals on which all real education must rest. If this be true, it is imperative that the high school as an educational institution should take hold of and care for all the essential activities of its community; and if the clay working or some other interest develop into a separate organization with a separate plant, that it still be under the control of the high school, as the different colleges of a university are under one control, and their policies and aims, though different, are yet harmonized into a common purpose of training for actual, not apparent, efficiency.

To teach all subjects to all men in the same school—this is the great educational, social, and economic opportunity of America, where both collegiate and secondary education are in the hands of the general public and not of any sect, class, or faction. If we throw away this natural advantage, bought with blood and treasure, or if we neglect to make the most of it, we are guilty before the nation and the race of a breach of trust second only to the sin of treason.

If we follow precedent blindly and transport that alien institution, the European trade school, and transplant it into the free soil of America simply because it is temporarily easier than to complete the system we have so splendidly begun, then shall we commit an educational blunder that is inexcusable, and we shall richly deserve the anathemas that will be ours from generations yet unborn when they come to see the handicap we have laid upon them and the natural advantages we have sacrificed.

I would have it so that the occupation of an American citizen may not be known by his dress, his manner, his speech, or his prejudices. If we can realize this ideal, it will be to our perpetual advantage, for it will insure not only our economic independence but our social comfort, our racial progress, and our national safety. If all this is to come about, we have some thinking to do now, for, as I have remarked elsewhere, more depends on what *we do now*, than can depend upon what we or others think and say and try to do twenty-five or fifty years from now.

When the materials for American educational history are all gathered, and when time enough has elapsed for its various elements to assume their true proportions and perspective, it will be found that the most significant fact in the educational movement of our day and time was the

agitation that led up to the establishment of the state university.

In a very large sense the founding of that unique institution of learning introduced two new and distinctive elements into our philosophy of education, both of which bid fair to be permanent, and to control even to the extent of revolutionizing our educational ideals.

The first of these fundamental doctrines was this — that no single class of men and no single class of subjects should dominate the educational policies of this people; and the second was that in the last analysis higher education is a public and not a personal matter.

The state university was in some sense a protest against the order of things then existing. Colleges were giving their exclusive attention to an exceedingly narrow range of human knowledge, and conducting courses of study that fitted well for theology, medicine, and law, but were calculated to unfit for other activities of men that were also essential; so that education served a few occupations at the expense of all others; for no man could find anywhere on earth courses of study to fit himself for usefulness outside the so-called learned professions, good and useful in themselves, but insufficient for all the needs of a high civilized people. This being true, the effect of education was not to enrich the lives of men generally and to advance civilization uniformly, but rather to draw from all walks of life into a few favored occupations, and leave the great outside mass of human knowledge undeveloped, neglected, and largely inaccessible, and most of the activities of men untouched by the vitalizing energy of learning.

The protest arose because all classes were not given equal opportunity and all activities were not equally benefited, in which case *the public was not well served*. Under

the old régime agriculture remained undeveloped, and farming was common labor. Building and mechanics generally were craftsmanship executed mostly by unskilled labor, which was bad for the men and the industry, and worse for the public whom they served.

The state universities were established primarily to teach the branches of knowledge especially related to the industries of life ; but their field has broadened in the doing, and their success has shown not only that learning may be useful without losing its educative value, but that all branches of learning are both useful and educative, and thereby worthy of being taught to somebody ; that in the interest of the public it is the business of a school as of a university to teach more things than any single man may desire to know, and that it is the business of our institutions of learning to reflect in their laboratories and in their class rooms the life and essential activities of our civilization at least in all its major aspects.

The other new idea introduced through the state university is that education is first of all a public rather than a personal matter. Colleges had long been maintained for the convenience of those who desired and were able to pay for an education, and those who took these courses did so with a view to bettering their condition personally. While the campaign for industrial education savored largely of personal needs and class equality in educational opportunity, yet in its working out we have discovered the deeper principle ; viz. that the public is not well served until we educate freely for all useful activities, to the end that these activities shall be in the hands of educated men, under whom only will they develop and by which development only will our civilization as a whole prosper and progress. The ultimate purpose of a great system of education is and

must be the development of human activities, both industrial and non-industrial, and our great demand upon the individuals that have enjoyed its advantages is service — service in something, somewhere ; anything, anywhere.

The great mass of human happiness will always arise out of doing well the common things of life, and the happiness of the individual will lie in that creative genius which does to-day the same thing it did yesterday, but does it better. All else is spice and seasoning to life, and as we cannot live on cakes and spices, so the enduring things will always be the useful things. There will be no educated aristocracy, for education will have a higher purpose than to give one man an advantage over another.

Every man's life is a comedy, a tragedy, or a symphony, according as he is educated. It was a great thing when the common man first lifted up his head, looked about him and said, "I, too, will be educated." It is our business to see to it that that high resolve shall not destroy the race, but shall still further bless it.

CHAPTER II

INDUSTRIAL EDUCATION WITH SPECIAL REFERENCE TO THE HIGH SCHOOL¹

"We have learned to look to our schools and to ask, in the name of charity as well as of education, whether they are training for that efficiency which will prevent poverty." — EDWARD T. DEVINE, in the *Atlantic Monthly*, December, 1908.

THE subject of industrial education is so broad and the interests concerned are so vast and so varied that no single writer can hope to bring to its discussion that complete knowledge which is necessary to the rational and final solution of a difficult problem.

I cannot and do not pretend, therefore, to speak with authority, so that what I shall say is to be regarded as a contribution to our deliberations, arising out of a somewhat intimate association with a particular class of people in their attempt to supply their educational needs in such a way as to contribute to, and not detract from, the general welfare.

Again, of the many things that might be said and of the many considerations that might be advanced as bearing upon so important a subject, it is manifestly impossible to do more than to select here a thought and there an illustration, depending largely upon the happy circumstance of accident if the picture drawn be true to life or even the reader be enabled to see clearly any picture at all

¹ The substance of an address delivered at the high school conference, University of Illinois, November 20, 1908.

from the meager outlines that must of necessity be hastily drawn.

It is extremely difficult, if not impossible, to define industrial education, but we all know very well what it means. For example, it means education in and for agriculture, the mechanic arts, household affairs, and the major industries generally, as distinct from education in and for the so-called learned professions. It means specialized education in and for the ordinary occupations of men, as distinct from the purely mental occupations, and as distinct also from mere mental acquisition and training without regard to occupation.

The first step in the solution of this question has been taken already in the educational world quite outside of our field, and we are greatly relieved and advanced thereby in our present considerations. The time has passed when the so-called general education is held to be ample for all purposes, and even quite outside of industries we have highly specialized courses — courses in journalism, courses in diplomacy, courses in banking, in accounting, in music, in painting — all professional, but all, in the strictest sense, non-industrial.

The need of specialized courses looking to occupations outside of the original triumvirate of law, medicine, and theology, is, therefore, already well recognized, and it relieves us mightily, for we can begin at this point and confine our discussion to the need for courses looking to industrial careers and to the question of how and where these courses should be offered.

This matter of industrial education has been before the public a generation and more until now, like a poor relation, it is ever with us. Feeble at first but always insistent, like Banquo's ghost, it would not down, but it has gathered

force and finish with the years, until to-day it is about the most robust educational problem before us as well as one of the most important, because of the far-reaching consequences of whatever policies may be adopted for its solution.

Some of the methods that have been proposed are so grossly inadequate on the one hand and so oblivious of racial integrity and the highest public good upon the other as to force us to the conclusion that the advocates are not fully advised of all the forces that have brought this question to the front, and consequently their solutions are not solutions, but only temporizing substitutes. Let us not err at least in this direction. Let us, therefore, at the outset inquire somewhat carefully into the conditions that have brought the problem before us.

Now the demand for industrial education is not a piece of academic evolution; that is to say, it did not originate in the schools. It arose as one of the demands of the masses of men for better life and opportunity. Its nature, as well as its relation to other forms of education, can best be understood in connection with the conditions of its evolution. Therefore, at the risk of seeming to wander far afield, let us at this point refresh our memories a bit upon our social and educational history and development.

Our modern educational system is the product of comparatively recent conditions. It is not the lineal descendant of Greece or of Rome, of Egypt or of Babylonia. It was born in the Middle Ages, nourished in the cloister, grew with Magna Charta, and is coming to its fruitage now.

In those dark days, when might was right, the common man was counted with his cattle as part of the spoil and the property of the latest conqueror. When war blotted out industry, no man could succeed except upon the king's

favor, and when the king declared, "The state, it is I," it was only the monk in the cloister that dared dispute him. It is exceedingly significant for our purpose that it was in these days—not so very long ago as time is measured by racial history—when kings could neither read nor write but counted learning as foolishness,—it was in these days that Magna Charta granted to monk and to freeman *alike* the blessings of legal rights and civil liberty.

This was the first recognition of the rights of the common man since the days of Greece and Rome. It made the evolution of a people possible, nay inevitable, and there and then was laid the foundation for the conditions that have given rise to the problems of industrial education in our own day.

It was then that the lamp of learning, like the lamp of liberty, flickered only in the cloister, and education, like religion, meant separation from the world, which was regarded, properly I am convinced, as wholly given over to the flesh and the devil. Under conditions such as these, meditation was the only occupation of the thoughtful man, religion was his only consolation, and the only use for learning was in the reading of the Scriptures. What wonder that it has taken all these years afterward to make our religion really useful; what wonder, too, that in our own day we are having the trouble of our lives in the endeavor to make of learning not only a consolation and an inspiration, but a useful thing as well!

With the revival of learning, humanity flourished. The learned professions developed, and men prospered and grew happy. Property became secure, and the fruits of industry belonged to the one who earned them. For the first time in the modern world, life to the common man promised to be worth the living.

It was inevitable now that this common man should begin to think, and as he thought, become ambitious. The rise of individuals had proved him to be made of the same stuff as other men, and he was conscious of his possibilities. He determined to avail himself of the opportunities of life and, noting the advantages of education to other men and their conditions, he resolved to become educated himself.

Very natural was all this. The common man, like others, would better his conditions if he could, and he came rightly to conclude that the place and the way of beginning was to possess himself of a fair share of the world's knowledge, at least so far as it applied to his condition. His resolve, therefore, to be educated, was as natural as life; indeed, it was the inevitable consequence of liberty to a capable race.

The resolve of the common man to secure the blessings and the graces of learning was not announced formally at any great national or international gathering. It was not the result of the labors of any committee on resolutions. It was the result of a deep-seated conviction, born silently but simultaneously in the hearts of thousands upon thousands of a free and capable people. And it has come on silently, but relentlessly as the tide, till now it is well upon us; and here lies our problem.

This resolve of the common man to be educated — what was it? What did it mean? Whatever else it meant and is meaning, it means *universal education*. If the common man had been contented to do without learning, and we had all been willing to let him, our educational problems in these days would have been comparatively simple.

We should have gone on as before, fitting men for the learned professions only. I imagine, however, even then,

as learning grew and the world's stock of knowledge accumulated, we should still have seen substantial additions to these so-called learned professions, and that by this road, if by no other, through the very exigency of public need, we should one day come to develop a scientific agriculture, a scientific engineering, a scientific system of household management, and so would the number and the range of learned occupations develop in good time as the very reflex of the wealth of human knowledge.

But this common man of ours has vastly hastened matters by his hitherto unheard-of and rather sudden resolve to be educated, thus forcing upon us without much warning and with little to guide us, the stupendous problem of universal education, for that is what our problem really is.

Now, universal education is something more than admitting everybody to the privileges of the schools. It did not take this common man long to find out that the learning of the cloister was not fitted to his necessities, and he learned, also, in good time, that the subject-matter and the spirit of the courses designed for theology, law, and medicine, though admirably adapted to the needs of the people they were designed to serve, failed utterly to serve the common man and his needs, save only when he desired to escape into one of the learned professions.

This for a time worked well, and many men did better their condition by escaping to these professions. But presently was discovered what we should all along have known; viz. that a course of study has a powerful influence not only over the future career of a boy, but ultimately over the destiny of occupations.

Thus it came about that individuals that went to the schools out of the common walks of life did not return. And thus it came about that the learned professions were

overloaded with much material unsuited to their needs; that many educated men failed in lines of business to which by nature they were not adapted; that many products of the schools halted at the threshold and did nothing in particular. Thus it came about that reproach was laid upon education, and, what was worse than all else, the common occupations were not themselves touched by the advantages of learning. Thus it came about that our first attempts at universal education were gigantic failures, because we ignorantly assumed that a form of education that was good for one man and his peculiar needs was good enough for all men, and if not directly adapted to their needs, they themselves could make the application later on.

It is not strange, with this experience running over many years and affecting and disappointing thousands of people, that many good men held universal education to be a failure and wholly undesirable in theory, as tending to industrial disturbance and to general social unrest. But here again the common man — common only because there are so many of him, and uncommon because it is his to meet and reckon with the everyday issues of life — here again the common man saw with a clearer vision than others what was the occasion of the failure. He noted not only that when a boy went from industrial life into the schools he seldom if ever returned, but he noted also that when he did return his education was ill adapted to his needs. He noted, too, this common man, that this policy was stripping the major industries of their brightest and naturally most ambitious men only, to pile them up where they were not wanted or to turn them into cheap clerks, to lead dependent and unproductive lives.

Nor was this the worst. The industries themselves were not developing under this régime. When the best men

went out and did not return, or if they did return, failed to bring into the industry that information and training that would still further improve it, then for that industry, knowledge was unutilized, and education might as well, even better, not exist. To this extent, therefore, and for this industry universal education *was* a failure, and more than a failure, for it attracted away the ablest and most progressive of the young men, leaving only the least ambitious and the least capable behind.

The common man with his practical vision saw all this, and with his characteristic directness went straight to the root of the difficulty, suggesting a remedy that was at once concrete and effective. He said, "As the older courses are adapted to the learned profession, so will we have other courses where matter and method are adapted to the needs of the industries and the industrial people," all of which was and is yet not only good sense, but good educational, social, and economic philosophy.

This, in its day, was regarded as heresy. As we all know, the old-time schools for the most part refused to establish such courses, and the establishment of separate schools was, under these conditions, a necessity. Now the common experience has been that when courses suitable to the needs of the special industries have been properly formed and properly taught, whether in separate schools or in company with other courses, young men have taken them in increasing numbers. Moreover, they have returned to the industries afterward and succeeded, because they have taken back with them not only new and useful knowledge, whereby the industry is better developed, but besides they have taken with them many of the graces of education, whereby the people are benefited as well as their industries. In this way we have seen a new meaning in universal edu-

cation and have taken some advanced lessons in its administration through its introduction into the institutions of highest learning.

In this way we have learned that education must be somewhat adapted to the ends in view; that as civilization advances and knowledge accumulates there must be many courses for many men, and we have learned, too, that there is by nature nothing incompatible between them because higher industrial education flourishes nowhere else so well as when associated with the old-time courses in the state university, that unique and modern association of teaching and investigation that is designed to minister to all the needs, industrial, social, economic, and artistic, of a rapidly advancing civilization. As a result of this experience we are all now in favor of industrial education without knowing or caring exactly what it is or precisely how it is to be administered. Nobody derides it any longer. The old "issues" are dead issues. There is no conflict between the classics and the industries, but all thinking men see clearly now that whether the education be classical or industrial, it is alike a part, and an essential part, of the successful development of a young, strong, and virile race.

The question now is as to practical methods of procedure. There is little dispute as to the nature of courses best adapted to industrial ends, though much improvement will be made as time passes. Academic standards and educational values are being set, and the future of industrial education is assured, whether regarded from the standpoint of the individual or that of the industry. The only real question — and it is gigantic — is whether and to what extent industrial courses should be added to our existing schools, or whether they should be relegated to separate institutions. Upon this point, which is vital to the

interests we all represent, and which is after all the only present issue, I venture somewhat extended discussion.

Of one large fact we may rest well assured at the outset; viz. that industrial education is with us to stay. The industrial people insist upon it and public needs demand it for reasons already mentioned and evident to every keen observer. We can, therefore, find a place for it in our schools, making it an integral part of our system of universal education, or it will make a place for itself and a system of its own, which will be the worse for all of us, as I have endeavored elsewhere to point out.¹

Moreover, the crux of the situation lies not with industrial education, but far back of it in that general realm of education for efficiency which is a natural corollary of a logical system of universal education. We already have abundant proof of the fact that all people cannot be educated upon one model, and that to attempt it not only greatly disturbs the social and industrial balance, but also produces too many failures.

There is one thing worse and more to be dreaded than illiteracy, and that is incompetence, and if there is one form of incompetence more hopeless than all others, it is that form which arises from bad schooling. All considerations of public welfare lead to the conclusion that we must have a philosophy of education and a method of procedure that will meet, not a portion merely, but all the needs of a highly civilized race.

Education is vastly more than a personal matter. We have often erred in the past by forgetting this, and we have proceeded as if no question were involved beyond helping the individuals in our schools to improve their personal condition. That is why in the past our school

¹ See chapter on Unity in Education.

system has greatly disturbed our industrial equilibrium and threatened permanently to injure the social state.

If, as formerly, only a few people and interests were affected by our system of education, it would matter little to the general public what is taught, or how it is taught; but when we embark upon a scheme of universal education as we have done, we must have a philosophy of education as broad as the activities and the capabilities of the race, or else we shall be injured instead of advanced at certain points and, to that extent, at least, education prove a curse instead of a blessing.

And so it is that there is a business, a social, a community, a racial side as well as a personal side to education, and if we are to have anything like a system of universal education, then it must touch and uplift and develop all the major activities of the race, as well as train and elevate the people in all the walks of life.

I have in succeeding chapters gone somewhat at length into the reasons for preferring that we retain the unity and integrity of our educational system by taking into our schools not only industrial education, but all other forms of educational necessity that are now felt or that may in the future arise, to the end that all interests may be well served and that, too, in a way not involving influences that tend to break up the homogeneity of our people, but above all preventing the evolution of an American peasant class.

This matter has been fully settled in the colleges and the universities; it awaits solution only in the secondary schools. The institutions of highest learning are freely introducing the most highly specialized courses, both vocational and non-vocational, industrial and non-industrial, nor do they feel that their educational standards suffer thereby.

Moreover, the strictly vocational courses succeed nowhere

else so well as when intimately associated with the non-vocational. This association is good for all parties. It not only adds culture and refinement to the vocational, but it adds directness and initiative to the cultural, thus turning back to the community a product whose individuals are highly schooled in specialized activities and therefore likely to succeed, yet by association have learned to be broadly sympathetic with all activities and with all classes of effective people.

We have thus learned that it is not only unnecessary but unwise to segregate an interest from its associations, and the state universities, which attempt to reflect in their curricula and their atmosphere the whole life of the people, are gradually coming to be regarded as the highest expression of the truest philosophy of universal education. In a word, I would see their policy transferred to the American high school, to the end that this most representative of all schools may do for the masses what the university is doing for the few.

A privately endowed institution may of course teach what it pleases, and one supported by tuition must teach what the students come to learn, but institutions of learning of all grades supported by public funds are morally bound to truly reflect the life of the people, and it is for this reason that I invite the American high school—which is not a preparatory school—to study and to imitate the policy of the state universities.

I do not propose industrial education in the high school as the easiest way of meeting the demand, but as, all things considered, the best way. Far from being the easiest way, I am convinced that so far as present comfort is concerned, it is the most difficult. It is the results that mightily justify our labors, however, and make it wise to expend

some special energy in meeting this as we shall need to meet other and future new demands as they arise from time to time.

So it will be worth the trouble for the high schools to take in and take care of this latest demand of our people, never fearing but that the funds will be forthcoming as its usefulness is proved, and resting well assured that other and still other similar opportunities will arise in the future as they attempt to meet and serve the needs of this rapidly developing people with its complex life and its progressive activities.

What then is involved in this great duty which includes, but does not end with, industrial education ?

First of all, and in all, and above all, this is involved — that the American high school must study and teach American life as a whole. The glory of Greece! How was it evolved, mostly within the short space of one hundred and fifty years? Not alone or mainly by the meditative study of Babylonian antiquities, but by the universal belief in and study of Greece, her people, her institutions, her interests, and her activities. Now, I would be the last to decry the study of ancient languages, literatures, and institutions, but I would be the first to insist that it should be done for a purpose beyond mere personal gratification, and that its high purpose be the upbuilding here among ourselves of the most complete development of which our race is capable. To this exalted end I invite all schools of all grades everywhere, but first of all, and more than all, the American secondary school, because it has its roots in the very lives and hearts of the people; and so I would put industrial education into the schools, not altogether because it is demanded, but because it is an essential part of a system of education that aims at racial development.

More specifically, what details are involved if we take this matter of industrial education into the high school? So far as agriculture is concerned, and the present movement has come largely from that side, I am comparatively clear.

I doubt much whether the high school in the heart of a great city has a function in and for agriculture as we of the country understand the term. It may teach it, or certain phases of it, for pedagogical reasons, and upon that point educators who have had experience are most competent to judge; but when we of the farm are talking about agriculture in the high school, we do not mean nature study, nor do we mean a slight inclination of science and mathematics to country affairs for illustrative purposes. That doubtless is good pedagogy in itself, but when we talk about agriculture in these schools, we mean a real study of and real instruction in those things that are involved in the business of farming and in the affairs of country life.

We do not, therefore, ask the city high school to teach agriculture unless it finds it advantageous to its general interests to do so, but of the country high school and of the village high school with a large country constituency, we do ask it.

And what is it that we ask? Not that the whole art and business of agriculture should be taught, and above all, we do not ask that the school become an agricultural institute. But we do ask that certain characteristic phases of the farming business and of country life be carefully studied and taught along with other things, upon the ground that it is the business of the high school to take note of and to reflect as far as possible the major activities and the conditions of life of the people whose children are to be educated, and on the further ground that, whatever the

future career, the education of the young should begin at and be at least partly concerned with the life activities into which the child was born, and with which only he holds living acquaintance.

Nor is this so difficult of accomplishment as it may seem. To study the lives of the people — of our people in these days — is the fundamental business of the schools, and to add to this something of vocational technique is not an insurmountable task. It is not the art of agriculture — that is, its handicraft — that needs most to be taught. That is long and difficult of accomplishment. Moreover, it is more a matter of practice than of instruction, and therefore of questionable educational value. It is the science of agriculture and the economic and social conditions of country life that need teaching most, and that is what the schools are best fitted to undertake.

The farmer understands the art of agriculture fairly well. Handicraft is his long suit, and to teach him much in that direction would require the trade school. This may come in time for certain branches, as, for example, dairying, but what is most needed now is such scientific study and moral support of agriculture as only the well-established high schools can give — and when I say agriculture I mean not only the business of farming but the affairs of country living, for agriculture is not only an occupation but a mode of life as well.

Farmers understand the art of agriculture fairly well, but they do not understand the science of agriculture, or, in other words, they do not understand either the sciences that underlie agriculture or their application to its affairs. This information, so far at least as it applies to such fundamental facts as soil fertility, plant and animal improvement, animal nutrition, home equipment and sanitation,

any good high school can, if it will, within the limits of stock knowledge, arrange to supply; and if it is a high school undertaking to educate country youth, then this information and help is not only its rarest privilege but its most sacred duty.

What is needed to start with is for the high schools to put in one or two elective courses in agriculture, and to teach these courses the best they can. An honest attempt will, here as elsewhere, produce substantial results. The teacher of science is the natural one to begin it, but as soon as possible a teacher should be provided who has special training in the science of agriculture. Do you say that such teachers are not available? They are coming along, and the demand will be answered in good time by a supply. Only show the teacher how he can better his condition and, like other men, he will jump at the chance. Text-books, too, are now available, others are in preparation, and matters are moving rapidly; indeed more of real value has been accomplished in this direction in the last two years than was accomplished during the first thirty years of the attempt to establish agricultural colleges. The materials for this work are now well at hand, as will be shown in a succeeding chapter.

Again, no school has a rarer chance to study, to teach, and to impress the great fundamentals of human living and social and economic relations than has the high school within reach of a country community. Here life is unadulterated with much that disturbs elsewhere, and here a miracle awaits the hand of the teacher who fully realizes his opportunity to influence the life of his people in his own day and time.

What I have said of agriculture I am convinced applies equally well to household affairs, only at this point all high

schools are certainly involved. By the division of labor anciently established and for which both custom and nature are responsible, the care of the house is woman's work, and whatever the choice of individuals, we as educators have no right to take possession of young girls and keep them in the schools till they are young women of marriageable age, without turning them back to the community at least somewhat better prepared than they would otherwise have been to meet the responsibilities and the work of woman. If the influence of our schools is mainly or strongly to turn our women into clerks, or even teachers, then, useful as these callings are, the quicker we amend our system of education, the better. The business of the schools is to train the great mass of the people for normal lives and to preserve, not to destroy, what may be called, for want of a better term, the eternal balance of things.

Schools have much to do to compensate for the fact that they take the children out of real life for a period of years into an artificial world that we call the schoolhouse. They come out of it with stores of information, to be sure, but they have lost a subtle something that comes only from personal experience in real life during the days of development. We are coming at last to realize that there is more than one avenue to a successful life, that the way by the schoolhouse may not be the best for all people, and that whether it is the best will depend upon whether the school gives a true or a distorted picture of life. Is the mirror of life which the schools hold up a true one? Is it badly concave or convex at any point? If so, that concavity or convexity needs correction.

The farm and the shop and the work of the household have a marked influence in developing executive ability and the power of initiative quite independent of the acquisition

of knowledge, and if we make the mistake of substituting mere accumulation of facts for this sort of development, and sacrifice the one for the other, it is more than an open question if on the whole we have not lost more than we have gained. It is the business of the schools to impart the one without the loss of the others, an additional reason for saying that much lies back of our problem besides the mere need for industrial training.

In a discussion like this I feel bound to say something about the mechanical industries which, like agriculture, are fundamental, not only because they concern vast masses of men but because the industries themselves lie at the basis of our further development.

What I can say on this point, however, is more by inference than from intimate knowledge. I certainly hold most strenuously that training in the use of certain tools is fundamental to all education. The square, the saw, the plane, the hammer, the needle, and the scissors, like the alphabet, lie at the bottom of civilization. They also afford the most direct, convenient, and rapid means for teaching not only that coöperation of eye and hand but also that rapid and ready execution of plans which marks the truly educated man or woman. All this is already recognized for pedagogic reasons alone, and we have both sewing and manual training in our schools everywhere.

But this is quite aside from the other question — shall these things be taught for the sake of the mechanic industries and as avenues to an occupation? I cannot escape the conviction that they should. If the schools of a great city do not reflect the life of that city, industrial as well as otherwise, then will the best children leave the schools or else, what is worse, the schools will distort the social and economic conditions of that city. I repeat in this connec-

tion what I have said too often already — if we are to have a system of universal education, then it must universally educate, or we shall be the worse for it, and will one day reckon with the consequences.

These boys on the school seats in the grades! Their fathers are in the counting house, the store, the factory, the rolling mill, the foundry, and in the street-cleaning department. What of the boys? Side by side they sit to imbibe together a conception of the world and form some sort of plan for their own careers. It is the business of the school to help them. It cannot do that by advising them all to become merchants, because all the occupations must go on in the future as in the past and, in general, these boys will be doing in a decade about what their fathers are doing now. It cannot be predicted of any particular boy that he will follow his father's occupation and he ought not, but it can be said with confidence of a roomful that they will be doing the same things their fathers are doing, because we are talking about a system of education for *all* the people.

After the schools have done their best, much will be left over for the minor industries, and here is the undoubted function of the trade school, but if we cannot and do not reflect the major industries in our school system, then we do not make them highly useful. We do wrong to absorb several years of a child's life without turning him out better able to support himself than if he had not attended school.

Just where to draw the line between the ordinary schools and the trade schools is not easy; indeed, I think it is impossible now to say, but I propose as a matter of safety and to facilitate the drawing of that line later — if ever — that the trade schools be also a part of the system and

under the same management as our other schools. Nobody holds any longer to the three learned professions. The list of honorable occupations touched and uplifted by education is being rapidly lengthened to the substantial benefit of all concerned and the list of so-called trades correspondingly shortened. Some time these limits will be better defined than now, but in the meantime let us so administer our education that an occupation may take its place in respectable society as soon and as rapidly as it accumulates a sufficient body of knowledge of a high order.

It is within my own lifetime that agriculture has fought for and won a place as a dignified calling and shown that for the common good the lands ought to be in the hands of enlightened people. In the same way many other callings will be elevated by the advantages of education if only favorable opportunity is afforded, and we will all agree that the gauge of our civilization will in the end be fixed by the status acquired by our leading necessary occupations.

To facilitate the rapid passing of these occupations to the highest state and to hold the situation together, I earnestly advocate the ownership and management of all trade schools and all other schools possible by the same boards of education and the same superintendents that fix the policy of the public school system.

If we can do this, then much of the vocational can be introduced into high schools without detriment but to infinite advantage, each school emphasizing the major industries of its own constituency. If we cannot do this, there is the greatest danger that our delinquent children may be turned out of our semi-reformatory industrial schools really better fitted for useful lives than are most of the children of normal citizens. There is evidence that the public already has its attention upon this point.

I have a vision of a system of secondary education so correlated with the grades upon the one hand and with the activities of life upon the other that the children need not declare in advance what their occupation is to be. The man who enters college ought to know definitely what he purposes to do, but the secondary school should be a place wherein the boy can find himself and pick his place in the world of active affairs. I would have not one but many courses out of this school leading into life — some into the trades, some into business, some into the professions, and some into college for those who know what they want of higher education, why they need it, and, moreover, who have the ambition to get it. There are too many young men to-day who leave the high school because it does not seem to be fitting them for the life they have the itching ambition to begin; and there are too many other young men in the universities who are shot there out of the high school much as the wind stacker delivers straw.

This is because we have not yet fully realized the complexity of the educational process, and it is because we have not yet sufficiently provided in our system for all the needs of all the people.

Now the secondary schools, if they exist for anything, are to administer universal education and make it apply to as many individuals as possible. They reach and touch the boy and the girl while yet members of the father's household, and I protest with all the earnestness of which I am capable that their business is to teach these people to get ready to live, and that without reference to college admission. It is a mistake to assume that the matter and sequence that best fit for college also constitute the best preparation for life without a college course, and that high school which allows the requirements of the accredited list

to dominate its policy is headed wrong in its philosophy of universal education.

It is for the secondary schools and the grades that lead up to them to serve the people in their needs — *all* the people in *all* their needs for everyday life. Anything less than this is that much short of universal education. The exceptional man is well served already, and his way is likely to be paved with all the helps that are good for him. In any event, the spirit of the times is not to overlook the common man whom also the Lord loveth.

Can the high schools turn their backs upon vocational training of any major kind and say, "Let the trade schools do that"? Dare they do it? If they do, as sure as time goes on, the people will establish industrial schools of their own that meet their needs directly, and we have lost our hold forever upon the industrial class which represents the mass; we have lost forever the opportunity to hold together productive industry and the higher mental life, and when our high schools have lost this opportunity, they are public schools no longer; the masses will withdraw their money as well as their attendance, our boasted public school system will exist only for the few, and our people will have broken into two classes, the leisure and the industrial, each schooled in its own fashion, the two inevitably drifting farther and farther apart, generation by generation.

Within a year two famous British educators on two separate occasions said to me in substance in my office: "Does America fully understand her two stupendous advantages?" I asked, "What are they?" and they said, "Your people are yet a homogeneous people, and your secondary schools are public schools."

What they meant was that we have yet no peasant class,

but are one people, and our secondary schools, being creatures of the public and not of a church or of any other class, could minister fully and freely to the public need as they saw fit.

This great problem goes far back and beyond the definite question of industrial education. If we are to make the most of our opportunity, we must truly educate all the people in ways that they will regard as useful to themselves and that experience will prove to be beneficial to the race as a whole. If we cannot do this, we shall break in two at some point, and once apart we shall never reunite. It is not easy, because the problem is complicated and there are few precedents. But it is worth the while.

Fortunately the precedents are all encouraging. The state universities have shown that no natural antagonism exists between the different interests of men as represented on higher educational levels. The high school is yet nearer to the people, and all attempts that have been made there to meet real and living needs have met with instant success, and that, too, without injury to the higher educational spirit and ideals but vastly to their betterment.

There are great times just ahead if we are wise. The people will give of their substance freely if the education of their young can be made useful. If we can do this, then can we add to industry both culture and refinement; then will great souls arise from all the walks of life and we shall be one people. I beg you, my fellow-teachers, to study this problem as your religion. The fates have put it upon you to settle. A generation or two and it will be too late. And as you settle it do not shirk labor, do not fly to the separate school because it is easier, but treasure as your life, I beg of you, the universality, the integrity, and the unity of the American educational system.

CHAPTER III

INDUSTRIAL EDUCATION A PHASE OF THE PROBLEM OF UNIVERSAL EDUCATION¹

To see to it that no individual shall be obliged to choose between
an education without a vocation and a vocation without an education.

No system of education, however good in itself, can claim to be or hope to become universal if it does not touch and benefit all classes of men and all legitimate branches of their activity, both industrial and non-industrial, vocational and non-vocational. I take it that universal education means exactly what it says—the education of all sorts of men for all sorts of purposes and in all sorts of subjects that can contribute to the efficiency of the individual in a professional way or awake and develop the best that was born into him as a human being.

Looked at in this broad way, industrial education does not differ logically from any other form of professional training that requires a large body of highly specialized knowledge. Nor do industrial people as such necessarily constitute a class by themselves, but are men like other men who love and hate, who earn and spend, who read and think, and act and vote, and do any and all other acts which may be performed by any other citizen. Now all of this leads me to maintain the thesis that industrial education is not a thing apart, but is only a phase, albeit an important phase, of our general system of universal education,

¹ See also address at the superintendents' section of the N. E. A. at Chicago, February 25, 1909.

a thesis that is more plausible when we remember that every man needs two educations, one that is vocational and one that is not — one that will fit him to work and one that will fit him to live. When we remember that there is less difference between industry and occupation than we once assumed; when we remember that ninety per cent of the people follow industrial pursuits and will continue to do so; when we remember that all major industries, like other essential activities, must go on in the future as in the past, even though every man in the community were a college graduate, and when we remember that it is for the public good that these major industries be developed and occupied by educated men, surely this position is not unreasonable.

All parties are agreed that in order to secure a fair degree of efficiency some sort of specialized instruction should be given in industrial pursuits. The old apprentice system has passed away, and the work of instruction for industrial efficiency seems to be thrown upon the schools. It is a new problem, and they appear not to know quite what to do with it. It is perfectly clear that industrial education calls for new and different courses of instruction from those designed to fit for non-industrial pursuits. The only question is whether these specialized courses of instruction constitute a part of our public school duty or whether the peculiar educational needs of industry and of industrial people may be left to take care of themselves. In discussing industrial education, as with all other forms of education, it must always be remembered that we are dealing with the man as well as with the craftsman, and I use the term craftsman in its broadest sense to cover the work of the lawyer as well as that of the farmer.

And this man; what of him? Surely he is a factor in the

case. He is something more than a farmer or a doctor or a lawyer, or else he is something less than a man. His education is not to be limited by the demands of his vocation. We have too many of that kind already in all professions constituting a kind of museum of educated parrots that go through their daily stunts, each considering himself highly educated and all other men at best merely trained.

Yes, the man himself, the human element in the case, must be educated. And if he be truly educated he will be trained in some profession — no matter what — and he will also be trained outside of his profession so that he will be bigger than the means whereby he earns his bread and butter ; and this applies to all men of all vocations, for there is no such thing as a learned profession except in the sense that all the major activities are learned.

So I lay down the proposition that whether the education be industrial or otherwise vocational, it is but a part, though an essential part, of the education of a man, and that all these specialized forms of vocational instruction are but different phases of our problem of universal education, to which we as a people are committed.

Like all great purposes actuating the masses of men, the development of this idea of universal education has been a growth. It began with the conviction that in justice to the individual and for the safety of the state, all men of all classes should possess at least the rudiments of learning, and the first step toward a complete system of universal education was the free public school wherein the child of the rich and of the poor alike, whether genius or dullard, may learn to read and to write and to reason, which after all are fundamental to all education. Our elementary education is universal in the sense that it applies to all the children of all classes of people and without discrimination.

This marked a new epoch in the life of industrial people, because hitherto the policy of the world had been to keep working folk ignorant, apparently in order that they might remain contented with the hard lot to which Providence had presumably assigned them; because, forsooth, must there not be hewers of wood and drawers of water? So were laid the foundations for a system of universal education — universal in the sense that it applied to all men — affording not only the rudiments of learning but opening a highway even to the college and the learned professions, and many escaped thereby from a hard life of toil.

But no scheme of education is truly universal or can hope to become so until it not only touches and uplifts all classes of men but also touches and uplifts their industries as well; for it is not expedient that men should desert industry as soon as they are educated, but rather that they should remain and apply their education to the development of the industries, that the public may be better served and the economic balance of things be not disturbed by the evolution of an educational system aiming to become universal.

The need of attention at this point became evident, especially to industrial people, and on July 2, 1862, Abraham Lincoln affixed his signature to the most far-reaching bit of federal legislation ever enacted. I refer to the Land Grant Act, whereby there was provided for each state of the Union "at least one college whose leading object shall be, without excluding other scientific and classical studies . . . to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Here we have the whole scheme not only of industrial but of universal education in a nutshell — a liberal and practical ed-

ucation without excluding scientific and classical studies : what a text for an educational discourse !

Building on this broadest of educational foundations, most of the states have established industrial education on a new basis, and some of them have so combined and interwoven it with other forms of education that none can tell where the one leaves off and the other begins. These are the state universities whose lead in this respect is being rapidly followed by institutions not on the land grant foundation, until now we can truly say that on college levels to-day industrial education is not a thing apart, but is an integral portion of the great educational effort by which the people of a commonwealth seek to so educate all classes of men as to develop at the same time not only their intellect, their literature, and their art, but their industries, their occupations, and their *activities* generally. This is universal education in its fullest sense.

Our elementary education, therefore, is universal in a sufficient sense for its purpose, and our university education is rapidly becoming universal in its broadest sense, because here all subjects are studied and taught and all occupations and industries are represented and made to flourish in a common atmosphere of higher education.

But as yet we have no system of *secondary* education that can be called universal, and until the matter is settled at this point and settled right our system is weak at its most important level, because it is our secondary education that touches our people during their formative period and that really reaches the masses in such a way as to be truly universal in extent.

I say that our secondary education is not yet universal. True, the high schools are open to all who have finished the grades, but they do not offer to most classes of people

that instruction which is a preparation for their lives and which the needs of the times and the impulse of the people demand.

The high schools took their cue originally from the old-time academies, which were training schools for classical colleges. Since then primary education has become universal because it involved nothing but opening the schools to all the people free of tuition. The education of the colleges has become or is rapidly becoming universal because the people demand that the benefits of higher education shall not be limited to a few favored occupations and those who follow them — all upon the ground that such a course would be pernicious, because against the public welfare.

The same influences are beginning to work in our high schools, which are moving in the wake of the colleges, it seems to me, in a way that is wholly commendable and that needs only to be accelerated and not retarded.

The high schools are schools of the people, and in response to their demand they have added to the old-time classical courses those in modern science, in manual training, in household science and, indeed, many are now adding agriculture, stenography, telegraphy, bookkeeping, type setting and a list of vocational courses almost too long to be mentioned, all without prejudice but vastly to the enrichment of the old-time courses of study.

So the high schools are rapidly following in the lead of the colleges, and if matters go on as they are now drifting in some of our best schools, it will not be long until, in response to public demand and common sense, we shall have a complete system of universal education in the largest sense of the term and of all grades, from the elementary

schools upward, in which men and women of all kinds and preferences will be able to get that education which will not only fit them for life but fit them to live. In the name of progress let this good work go on.

There are but three influences, it seems to me, that can interfere with the proper evolution of the high school. They may be outlined as follows : —

1. The movement in certain quarters for separate industrial schools — agricultural schools in the country and trade schools in the city — quite independent of the high school system, which is assumed to be indifferent if not antagonistic to industrial life.

2. The attitude of a few remaining exponents of the old idea that schools should teach nothing that by any possibility could be put to any manner of use.

3. The difficulty involved on the part of the high schools in adding not only to their educational purpose but to their courses of study, their equipment, and their teaching force, with sufficient rapidity to meet the new demands and mold the whole into an educational unity without such delay as shall make the claim seem true that after all the high schools have no real desire to serve the people in their industrial activities and will do no more than is necessary to half satisfy what they regard as an irrational public demand. Thus the high schools are put at a disadvantage at this most difficult period in their evolution, particularly as teachers are yet to be made, even while these new ideals are to be fitted into and made a part of our permanent educational policies.

These considerations are worth reviewing at the present juncture, because what the high schools need is time, and this is the element in the case least likely to be afforded. The activity of certain educators in favor of separate agri-

cultural schools of one kind or another, and what I am bound to call the selfish influence of certain commercial interests demanding city trade schools to teach the sort of handicraft which will produce skilled workmen in the shortest possible time and best enable us to meet foreign or other competition in manufactured articles — this activity and this influence seem ready to sacrifice almost anything for immediate results. This American edition of the German peasant school idea is a most dangerous because a most insidious and powerful menace to the right development of the American high school, which is or may be the most unique educational institution on earth, and which will constitute, if it can rightly develop, the key to the advantageous position which America ought to occupy both socially, politically, and economically, and which she can occupy if she is farsighted enough at this point and at this time.

If present tendencies can go on unhampered it will not be long until every community can have its high school which will reflect with a fair degree of accuracy its major industries and do it in the light of the world's knowledge and of the world's ideals. Such schools will turn out men and women ready to do the world's work and to think the world's thoughts as well as to dream the world's dreams and share in its ambitions. If we combine our energies, we can have such schools in America wherein every young man and every young woman can secure an education that is at once useful and cultural, and that, too, within driving distance of the father's door. If we unite our educational energies, we can do this, but we cannot do it in separate schools.

We can combine the vocational and the non-vocational in our high schools if we will, and each be better for the other, and all things considered, I must earnestly advocate

the taking over of our industrial education in all its forms into the existing system of secondary schools, seeing to it that one fourth the time of every pupil is devoted to something vocational, something industrial, if you please, and no industry is too common to use for this purpose. It is the common things of life that are fundamental, and it is through them that we teach life itself.

It is not necessary to bring all occupations and industries into our schools; some are not well adapted to academic conditions, but it is necessary that we bring in a goodly variety of what may be called the major activities, industrial and non-industrial, in order that life shall be taught in a variety of its forms and that the boy shall have a reasonable chance for choice.

Trade schools—would you have them? By all means, but I would have them as a part of the secondary school system. Agricultural schools? Yes, but as departments of the high school. Cooking schools? Yes, and more: I would have schools of household affairs, but I would have them as integral parts of the high school. Schools of stenography and typewriting? Yes, but I would not disconnect them from the high school any more than I would cut off from womankind the girl who needs perhaps for a time, perhaps always, to earn her own money.

In brief, there is no class of occupation that is followed by large masses of people that I would not bring into the high school and teach as fully as circumstances would permit, and I would compel every student to devote not less than one fourth and not more than one half of his time to these occupational lines.

I have said that a second influence operating to restrain the high schools from moving in this matter as fast as conditions require is the remnant of an old academic belief

that the purpose of schools is to "make men," whatever that may be, as distinct from making men ready for life. These are they who would teach nothing that could by any means be put to any sort of use. With them education is a luxury, not a necessity; a kind of holy thing that evaporates or in some way loses its essence when put to common uses or into the hands of the masses of men.

These are they who are always careful to speak of industrial education as "training," using a term whose meaning is understood from its frequent application to horses and dogs.

To such let me say that the thing which all men everywhere now demand, whatever their vocation or means of livelihood, is not training merely, but *education*, and they mean by that such contact and intimacy with the world's stock of knowledge as shall first of all develop the industry, and second, but not secondarily, develop also the man.

Thinking men now know that, education or no education, culture or no culture, whatever the grade of civilization we may evolve, certain fundamental industries must still go on. Moreover, they know that if these fundamental industries are to be well conducted and our natural resources developed, these activities must be in the hands of capable men; yes, of educated men, for industry, like every other activity of man, is capable of development by means of orderly knowledge and trained minds.

These thinking people know, too, that men of capacity cannot be found to develop these fundamentals except they may also themselves partake of the blessings of life and the full fruits of our civilization. They know that the days of hewers of wood and drawers of water, as such — condemned to a life of drudgery — are over on this earth wherever civilization exists, and that education, like reli-

gion, must somewhat rapidly readjust itself to new conditions and prepare to help the common average man to lead a life that is both useful to the community and a satisfaction to himself.

The aristocracy of education, like the aristocracy of religion, whereby a few were saved while the many groaned, is over, and education, like religion, must help the common man to meet and solve the common issues of life better than they have ever been met and solved before — hence industrial education; hence vocational education; hence universal education.

These good people who shy at the term industrial education are remnants of a past condition when educators and others entertained that old-time and curious conception of industry, whereby industrial people were assumed to remain uneducated and were by common consent assigned to a social position of natural inferiority, as if a farmer or mechanic, for example, acquired by his daily life a kind of toxic poison that not only destroyed his better faculties but was likely to exude and soil or injure others.

Let me call the attention of these good people to the fact that, whatever their social status, the industrial people hold the balance of power politically and socially, for they constitute ninety per cent of the population, and that for all practical purposes, and in the last analysis, they are the people, and their education, whatever it is, will really constitute our system just as their numbers will largely dominate our affairs generally and fix the status of our civilization.

The colleges learned long ago that to meet modern needs they must afford every man two educations: one, technical, to meet his business needs and make him an efficient member of society, but which would tend to narrow him as a man; the other non-vocational, which has no money-making

power, but whose effect is to liberalize and broaden the man by attracting his interests and widening his knowledge outside the field wherein he gains his livelihood.

The high schools must learn the same lesson, and the sooner they do so the better for all interests. Therefore these high schools that are introducing the industrial are developing in the right way. The high schools are not preparatory schools for college. They are preëminently the schools wherein the people are fitted for life. Where one man is educated in college, twenty will get all their preparation in high schools. The high school, therefore, is the place wherein the boy shall find himself to the end that if he goes to college he will have upon matriculation clear ideas about what he intends to do, and if he does not, he can go out from the high school at once and take some useful part in the world's work. The large number of high school men, even graduates, who have no plans and more than all no fitness, preparation, or inclination, for any sort of useful activity, is a pathetic and dangerous fact—pathetic, because so much good material has been wasted; dangerous, because the high schools must either change their ideals and introduce the industrial freely, or the industrial masses will found other schools of their own that will meet their needs as they have been met on college levels, but as they have not yet been met in secondary grades where the masses go.

The colleges have learned that it is not necessary to absorb all the time of a student in order to turn out an efficient man vocationally. Much less is it necessary in secondary schools. On college levels from one half to two thirds of the student's time suffices for the vocational, and when we learn better how to teach, results can doubtless be attained with still less, leaving a generous amount of

time for the pursuit of non-vocational and therefore of liberalizing courses, for the effect of a course of study, whether narrowing or broadening, depends less upon the subject-matter than upon the attitude of the student and the purpose for which he takes the course. Chemistry to the farmer is a professional subject; to the journalist or the lawyer it is non-professional and liberalizing.

If we will honestly take into our high schools as we have taken into our universities all the major activities, splitting no hairs as between the industrial and the professional, for no man can define the difference so imperceptibly do they shade the one into the other—if we will take them all into the high school as we have already taken them into the universities, and carry them along together, the vocational and the non-vocational side by side, day after day, from first to last, so the boy is never free from either, then will all our educational necessities be met and we shall have gained a goodly number of substantial achievements, prominent among which I would mention the following:—

1. One fourth of the time of the boy or girl could be devoted to vocational work in class room or laboratory throughout the course.

2. This would turn out every boy with some skill in some branch of the world's work, and do away with that large and growing number of young high school graduates who are fitted for nothing and are good for nothing in particular.

3. It would attract the attention of the boy to self-supporting activity before he loses his natural ambition by too much schooling with no initiative.

4. It would turn out girls with some training in household affairs, and those who desired it in such occupations as women follow for self-support.

5. It would vastly uplift most occupations and all of the more ordinary industries by bringing into their practice the benefit of trained minds and methods.

6. It can do all this and still leave three fourths of the time for the acquisition of those non-vocational lines of knowledge which all men and women need, because they are human beings getting ready to live in a most interesting world.

7. In this way, we should have a single system of education under a single management, but giving to all young men and women really two educations: one that is vocational, fitting them to be self-supporting and useful, the other non-vocational and looking to their own development.

Expensive? Not more so than to have it done in separate schools, surely. It will be done somehow, and the question now is, will the high schools really rise to their opportunity and secure through themselves a real system of universal education, or are they to lose their chance and are we to have in the end not a real but only a patchwork imitation of a system of universal education?

I am well aware that all this will be held by some as a lowering of standards and a degrading of education by commercializing it. Against this conclusion I protest most emphatically. Does it degrade a thing to use it? Does it degrade religion to uplift the fallen or to sustain the masses of men from falling? Is education a luxury to be restricted to a few favored fortunes, or is it a power to uplift and sustain and develop all men?

Are you afraid to educate the ditch digger? Is the education of the gentleman too good for him? Are the facts of history too profound or the satisfaction of knowledge too precious to be the common property of man? Does

it make my satisfaction less when it makes his more, or are we afraid that he will climb out of the ditch if he is enlightened? There is no danger of that. I have dug ditch and laid tile every month of the year, and that since I was a college graduate, and I am ready to do it again. I am ready to do my share of the world's work; yes, of the world's dirty work. It was Colonel Waring who cleaned up New York City. It was the educated engineer who made a sanitary Cuba. The educated man does anything that needs to be done to get results. It is the uneducated or the badly educated who fails to comprehend the eternal balance of things.

I desire to call attention to one more phase of our problem; to what may be called our leisure asset. There are two leisure classes, one small and unimportant, the other large and important. The first consists of the idle rich who by accident were born after their fathers, and who intend to live a parasitic existence, paying for their needs with other people's money. They are altogether useless. It matters little how they are educated, and the sooner they die off the better for the world. They do not think; they do not act; they only vegetate and glitter; they do not enter into the discussion here. The wealthy who do not belong to this class are too busy for leisure.

The other leisure class is the great industrial mass, who, after all, own and control about all the useful leisure in the world. The minister has no leisure. The teacher has no leisure. The lawyer, the leader everywhere, has no leisure. What he does he does under pressure and because he must.

But the farmer, the craftsman, the industrialist generally, labors only in the daylight hours and for a portion of his time. What he does with the balance of his waking energies

is of the utmost concern. Here is the great racial asset, both social and psychical; both economic and political.

If this great mass of men, constituting all but the degenerates, can be properly educated, the racial asset of their leisure moments will in the end be tremendous. It is this mass and what it thinks and does in its leisure hours, either blindly or intelligently, that will ultimately fix the trend of our development and the limits of our achievements, not only in politics and in business but in literature and art as well. There is no reason why the craftsman should not be also a connoisseur in lines outside his personal and daily activities. It is better, therefore, that our common people be educated and educated broadly.

Moreover, it is out of this mass that leaders arise, and if their education be sound, then will our leaders be wise and safe. You cannot longer maintain an educated aristocracy. There will be but one aristocracy, and that will be the aristocracy of personal achievement; and if we do not want the world entirely commercialized, we must so merge our industrial education into our general system as to have in the end not a mass of separate schools with distracting aims and purposes, but a single system of education serving all classes and all interests. It is the only influence that will preserve a homogeneous people.

In thus amalgamating the vocational and the non-vocational, I would like to say a word for what might be called the parallel system as distinct from the stratified. That is, I would have a boy from his first day in the high school to his last have to do with both the vocational and the non-vocational. I would have him every day take stock of things vocational in terms of world values. I would have him devote a full fourth of his time to what will bring him earning power, to be used for that purpose if he needs it

and to give him an independent spirit if he does not need it. Every man is a better man if he feels the power to earn his way, whether he needs to do it or not.

Do you say that this will so cut into his time as to prevent his getting an all-round education? Then I say that he will never get an all-round education anyway; that the most he knows at forty will be learned out of school, and that the business of the school is to give him a good start.

I beg, too, for a reform in the idea that a course is framed mainly for the one who graduates. If the vocational and the non-vocational are properly paralleled, the course is good from whatever point it is left, and whenever or wherever abandoned it has taught the student the proper balance between industry and life; between the means and the ends of existence.

All this will take time, because it means to some extent the readjustment of ideals, the addition of new courses of study, and of new materials and methods of instruction. It means the making of a new class of teachers who must largely train themselves by a generation of experience. It means the making of a more complicated system of instruction than has ever been undertaken — a system as complicated as American democratic life.

But it is worth the while, for nothing better is possible. It is easier, of course, to short-circuit the matter by assenting to the separation of industry and education, but no race need hope for supremacy nor for the evolution of its best till it combines industry and education, which belong together in the schools as they do now and always must in life.

So I say to the high schools — Do not wait for approved courses of study, nor for the production of skilled teachers.

Go ahead and do the best you can. An honest effort is half the battle, and it is worth more now than it will ever be again. Do not hesitate till methods are marked out. If you do that, you and the cause are lost, for the separate industrial school will surely come. We know the ideal—an educated American in all the activities of life. Let us go ahead and produce him and mend our methods later on.

Education is no longer a luxury. It has become a necessity for the doing of the world's work. It is no longer for the edification of the few; it is for the satisfaction of the many; and whether we regard it as industrial or non-industrial; as contributing to the efficiency of men or to their elevation in civilized society; however this or any other educational problem is regarded, they are all but phases of our general and stupendous problem of universal education, the best guide to whose solution is to teach in a unified system of schools all the things that the community needs to know, and let the individual take his choice concerning the vocational subjects.

CHAPTER IV

THE EDUCATIVE VALUE OF LABOR

The daily doing of needful things with regularity and efficiency is half of a liberal education.

I YIELD the palm to none in my appreciation of what education can do for an individual, for a profession, and for a community, but in many respects we are school mad. Every child needs as much as he can get of the knowledge of the world and of the wisdom of the ancients to help him to meet the issues of life, but he needs also personal touch and experience with the world of to-day, that he may know how to meet and to deal with the world of to-morrow when he will be a man with maximum responsibilities.

I have said that in our thirst for information we have become school mad. I say it because we undertake to absorb practically every moment of the time of the child in his academic work, most of it with books dealing either with ancient affairs or with abstract information which, good though it is, cannot constitute a sufficient preparation for a life in the present and with the concrete. When the high school girl must choose between her music and her high school course, then something is wrong, and the evident remedy is to absorb less of her time in her studies, leaving time for music, or else to count the music as a part of her course. When she is so busy with her studies that she has no time to perform any part of the necessary labor of the home, then something is wrong, and the remedy is

to require less of her time in the school, or else to take household affairs into the course.

If the schools as now organized could have their way with a boy, they would use all his time in the schoolroom and get him through the grades and the high school at seventeen or eighteen, then on into college for four years, with three more for a doctor's degree, expecting to turn him out at twenty-four or twenty-five an educated man.

Educated in what? Educated, no doubt, and highly so, in that world of knowledge which is sufficiently old and well-ordered to have found a place in books. Educated, too, perhaps, in methods of acquiring new knowledge by reading old literature from a new angle, or by a first-hand study of some great natural law or some little-known organism.

All these things he may know and do, but as to that great moving, whirling mass of mind and matter that we call the world, where the concrete and the everlasting present are uppermost; where man rubs up against man — in this relation he is a child, with a child's outlook and with that queer combination of timidity and of ignorant assurance that mark the child's first contact with the world about him. Such is the penalty we pay for that form of education which is almost exclusively academic.

Now the difficulty with this man is not that he knows too much. It is that he has experienced too little. It is not that he has lived too much in the past; it is that he has not lived enough in the present. It is not that he is too familiar with the abstract, but it is that he has not dealt enough with the concrete. It is not that he is too adept at generalization; it is that he is unfamiliar with the particular. It is not that he knows too much of books; it is that he knows too little of men. It is not that he knows

too much of the history of the race; it is that he has not himself met and conquered the personal issues of life.

What is it that such a man has really missed? The answer can be framed in many terms. We may say that he has been taken out of his natural environment, and that is true. While other young men have been plowing and planting and reaping, buying and selling and building, he has been looking on and going to school. While others have been earning, he has been spending. While others have become independent and self-supporting, he has been dependent. While others have married and established families, he is unmarried or perhaps is being supported in college by the labor of his wife. While others have developed in experience as in stature from children into men, he has remained undeveloped on the experience side — a man with the outlook of a child. What wonder that so many of our brightest young men scent this thing from afar and get out of the school at a deplorably early age! What wonder that of those who remain so many conclude that after all it is better to go on learning than to begin doing and drift ultimately and necessarily into minor positions. This is of special detriment to the teaching profession, because of all men the teacher should have had much experience with the world.

To realize still better what this man has lost who has lived inside the schoolroom till he was twenty-five, let us examine a little more in particular into the life of young men outside the schoolroom, with a view of better understanding the educative value of that form of work which we call labor. The boy on the farm, for example, is told that it is his job to feed the pigs, and he knows by this that if he neglects or shirks the duty the pigs will tell of it and he will be called to account. There will be no ques-

tion of a "passing grade" or a "conditioned examination." There is no way to partly do the job, nor can he escape by cribbing. The only crib in the case is the corn crib, and to this he must go, not once or even twice, but daily and regularly, for the pigs will tell on him every time he shirks, for no "point of honor" is involved with them. To the teacher who has had this experience in boyhood the cheap excuses and the petty deceptions so often indulged in by the schoolboy to avoid meeting squarely the issue of daily duties, to him the contrast is keen, and to him is laid bare the fatal defect in attempting to educate solely by the schoolroom method.

When these pigs are ready for market, the boy will see them sold, and if the father is what he should be, one of them belongs to the boy, and so will the proceeds thereof. Now this is a better way of getting money than to run errands or to have an allowance, because the process is natural and highly educative. All this is the experience of a boy on the farm before he is twelve years old, and I know many a boy who is buying and selling and dealing with men in standard values by the time he is fourteen.

This boy, if he is good for anything, will never rest well o' nights till he has harnessed a horse—for did he not break a yoke of calves of his own?—and he is never completely happy till he has driven a double team. Perhaps there is no development in a boy when for the first time he handles the lines and directs the energies of somewhere from a ton and a half to two tons of horse flesh! I know by experience as well as by observation that he is about six inches taller afterwards, and I believe he has grown more inside than he has grown outside. This boy soon "makes a hand"; that is, does a man's work, and I want to say that not again until his wedding day will this boy be

so happy and so consequential as when for the first time he is recognized as taking a man's place in the world. Soon after this the girls begin to call him mister, and then his cup of satisfaction is completely filled. After that he is a man.

Is all this trivial and unimportant? It is involved, I tell you, in the making of a man, and some time, somewhere, this experience must come, or the boy will never be a real man; for, like the young thing of any other species, the boy must test his environment day by day, and grow in strength and experience as that environment broadens.

The daily doing of needful things with regularity and efficiency is in itself highly educative. It constitutes a good and a necessary part of a liberal education, and without it no system of education is safe. It teaches, first of all, personal responsibility for things to be accomplished, whereby the child learns the useful lesson that things do not "just happen," neither do they "do themselves."

The getting of results, often against obstacles, and the bringing about of what would not otherwise have come to pass, so that the child can say with satisfaction, "I did that"—this, too, is educative. It may only be finishing the planting before rain sets in perhaps for days; it may be only the getting in of the last load of hay or grain before the threatened storm; it may be the breaking in of a spirited horse and the curbing of his nature to a superior will; it may be the feeding off of a bunch of steers or even of pigs and their marketing—it may be only these things, but they are the things that *men* do, and if the boy can measure himself with men a part of the time, it is better than to measure himself with boys all of the time. The writer counts now as his most blessed privilege and the most valuable part of his early training the experience

of an only son who planned and executed day by day for many years side by side with the father. The companionship of these two, boy and man, as they planned together to surmount their small difficulties,—small indeed, but they were the issues of life to them,—all this was, as I count it now, the most truly valuable part of my preparation for life. Such an experience cannot be compared with what is learned from books. The two are different. The important point is that *neither can replace the other, and both are necessary.*

When we take a boy out of his family life, off the farm or out of the shop, and absorb all of his time in the school-room, we owe him something in compensation. Do we say that manual labor is depressing, and that it tends to produce dullness and stolidity? That is only when it is abused. That is only when there is too much of it. That is only when it is unaccompanied by intelligent plan and purpose. That is only when, year after year, the same dull routine of toil is endured as a necessity of existence, with no high purpose and no ray of hope ahead.

But to the child manual effort is easy, yes, instinctive. It is for this reason highly stimulating and therefore educative. When a new thing is done well for the first time by the young, a sense of achievement and growing power possesses the doer, and manual accomplishments are among the earliest of possible achievements.

I cannot, therefore, overrate the educational value of manual operations, particularly as they develop into productive labor with financial recompense. A boy sets out to make a box. It only means the nailing together of five pieces of board, with a sixth for a cover. It seems simple, but trial shows that the boards must all be square, or the box will gap at the joints; and the attempt proves the

problem not so simple as it looks. The box does gap at the corners. It gaps badly, and the boy realizes what he would not have believed before — how difficult it is, after all, to saw off a board so that all the angles are right angles. If he tries twenty times before he succeeds, what matter? Only a little lumber and a few nails are wasted, but the boy is saved, for he has learned how easy is failure, and how difficult is success, even in so simple a matter as making a box. He has had the experience of failure, of repeated trial, and of ultimate success. Such a boy will never be discouraged later on by ordinary difficulty, because he has had the experience of winning over failure. The boy who has not had this experience till he begins business as a man will not know how to take the unexpected difficulties that beset what would seem to be the simplest case. It is better that the boy get this experience at the expense of a little lumber and a few nails while yet a child than at his personal cost when he gets to be a man, and is experimenting with himself and not with a box.

I know of no way either in which a just appreciation of money values can be so well indoctrinated as when the boy as a child earns some money by means of labor, as most men must earn it all their lives. Now, the need of learning the value of a dollar in terms of hours of labor and drops of sweat is as incumbent on the child of the rich as on the child of the poor; and public safety demands that they both learn it early in life. If this nation ever goes to ruin, it will be from inefficiency and unbridled extravagance, with the corruption which so surely attends upon non-constructive existence.

As a means of giving early experience with failure followed by success after repeated trial; as a means of teaching personal initiative and constructive activity; as a

means of teaching the money value of effort and the energy value of money, I must unhesitatingly recommend a course in that kind of work commonly denominated labor, and inasmuch as labor cannot replace learning, I must earnestly urge the closest possible joining of the two.

I would not, therefore, take a child out of his home environment and compel him to spend all his time in mental effort with academic lines of work any more than I would confine him to labor with no chance at that larger world of knowledge and experience which is mostly recorded in books. I would have him do both in order that he may grow somewhat naturally into the environment of men and things of his own time, and also be informed as to what other men and other times have to teach.

Accordingly, I propose that one fourth of the time of our school children be devoted to something distinctly vocational, and the nearer it is to manual labor the better, as I see it. In any event, I would have it deal with the ordinary things of life, not in a dilettante way, but in genuine fashion as men deal with the same things in the way of business. Is one fourth of the time too much to devote to this business of growing a boy in his environment, and what I am saying of boys is intended also to be said of girls, and to apply to all children who attend the public schools?

Private schools may run upon their own plan, but we cannot afford the consequences of a public school system of universal education that does not recognize the fundamental and substantial value of education in terms of industrial activity as well as in terms of the widest knowledge and the highest culture.

It is highly important that we never lose sight of our real problem of education. It is to fit a generation of

young people to live a life not like that of Babylon or Egypt, or even Greece and Rome ; not like that of Western Europe; not like that of ours in America to-day, but a life such as has never been lived anywhere on earth since the world began. The average child that is born to-day will live his active life from 1930 to 1960 or 1970 or even later.

Before that time comes, conditions here will be greatly changed. Moreover, there will be new conditions on the earth. Population has doubled thus far in America once every twenty-five years. If that ratio keeps on, we shall double our population before the children in school to-day get well started in active life. Think what industrial, economic, and social changes are involved therein, raising issues that they, not we, must meet and for which our present-day schooling, I apprehend, is none too well adapted. If the normal rate of increase continues, we should have 180 millions of people in 1935 ; 360 millions in 1960; 720 millions in 1985, and 1440 millions in 2010.

Manifestly, this normal rate of increase cannot continue another hundred years, *but something will happen in its checking, and the children that we are educating will be there when it begins to happen.* Are we schooling them so as to be ready to meet these issues? I fear not.

Accordingly, I would not educate them less in the world's past or in whatever useful knowledge has been learned, because they will need that knowledge for guidance in meeting new and difficult issues, but I would educate them more in terms of the present and in the way of personal and independent initiative, and above all in the methods whereby the individual takes his place among men and becomes *at once and with certainty* a self-supporting member of society. The proper blending of these two forms of education is

necessary to efficiency ; moreover, it is the way to prolong the school period and keep the boy in school.

I repeat, therefore, my firm conviction that a fourth of the time of the child in school up to the level of the college should be given to vocational work. Is the objection raised that there is no time? Why not? there is all the time there is. The objector is thinking about that sacred four years' high school course and the customary passing up through the grades to reach it. He is thinking about graduation. I say, never mind graduation, but look out for the boy and preserve a proper balance in the material and the processes employed for his educational development. We get our children through the high school too early now. It were better to take more time.

It has been assumed in the educational world that vocational training is college work to be undertaken after graduation from high school, and some would say after a non-vocational undergraduate course. Now, manifestly, this must apply, if at all, to leaders in highly specialized callings. It cannot apply to the rank and file nor to ordinary occupations because most men do not and never will go to college. Most men do not, but most men might, attend high school, though few will graduate, whatever the conditions of graduation may be. I am thinking more about those who attend and the conditions of attendance than I am thinking of the conditions of graduation and of those who graduate, for they will adjust themselves, whether graduation takes four years or five years, and whether and on whatever terms they enter college. What they study and do, day by day, is of vastly more import than when or how they graduate or whether they graduate at all.

That is why I would not take a child entirely out of his environment to school him. That is why I would not

make the acquisition of information the sole business of childhood. That is why I would say that from the first day of school till the last, one fourth of the student's time should be devoted to the vocational.

Having done this as a condition of attendance, the conditions of graduation can be modified so as to give credit for the vocational, or the time can be extended to five years, if graduation is to be based only on academic work. I care little about that, but I care everything for the principle and the practice of uniting by the closest possible educational bonds, day by day and every day, the vocational and the non-vocational.

When we come to do this, then will the individual be able to take his place among men because he has had the experience of men. Whether he graduates or whether he does not graduate — whenever he leaves the school, if this be the plan of our schooling process, he will have some education of the head with some initiative of the body, with some promise of at least fair efficiency, with a little knowledge that is beyond his own horizon.

It is a sacrifice for the individual and a distinct loss to the state that so many children feel obliged or are compelled by their parents to leave school and earn money to support themselves and perhaps other members of the family. It has, however, its compensations, and I would mitigate its evil as far as may be by taking over much of this work into the educational field and giving for it substantial credit in the fraction that I have indicated as being properly devoted to the vocational.

Does the boy spend his summer and his mornings and his evenings on the farm? Then let him report on what he does there; whether he helps to carry the work and business forward, or whether he idles the time away. If

the former, he is entitled to credit for one of the most valuable components of his education; if the latter, then let the school set him at something useful, something tending toward the vocational, that no boy may acquire knowledge without thought of its utilization.

Does a boy sell papers after school? Why should not that fact be officially known and recognized as a factor in his education? Why should he not report upon it regularly — the number and kinds of papers sold, the place and the customers, whether regular or special, cost and profit, together with the disposition of the proceeds?

No child of school age should be permitted to spend all the day in the factory. Some portion of the day should be devoted to academic training, but surely the discipline and experiences of the factory have educational value, and it is to the advantage of the public that the various activities in which children engage should be assessed by the schools and their relative educational value ascertained.

Is all this shocking to our educational sensibilities? Does it smack too much of the practical, of the commercial, and of the ordinary? Is it too much a lowering of standards? I beg the objector to remember that we are talking about the public school and a system of universal education, whereby the masses are to get their only preparation for life and the trend that will fix their outlook forever.

CHAPTER V

THE CULTURE AIM IN EDUCATION

To put thought into our work and work into our thought; to idealize existence and to preserve these ideals in everyday life — this, too, is culture.

I AM exceedingly anxious not to be misunderstood with respect to that phase of education which we call culture, particularly that form of culture which has had in the past and is likely to have in the future its highest realization through the study of literary and philosophical subjects. All this I would preserve in the education of all classes of people.

It is the special purpose of these pages to emphasize a high degree of personal efficiency as a major aim in education, even if that efficiency is to be exhibited along industrial lines, and yet I have no sympathy whatever with any scheme of education that would neglect, much less eliminate, every time-honored subject or educational ideal that cannot demonstrate its direct and immediate application to utilitarian ends.

There is education, even culture, in technical training properly undertaken, but any attempt to secure industrial efficiency by the sacrifice of cultural subjects will defeat its own ends. If in the past we have made the mistake of assuming that a system of education aiming chiefly at culture would also secure efficiency, that is no reason for now driving to the other extreme and discarding the culture

aim entirely, by confining our attention exclusively to the so-called practical. While I would give to the individual large liberty of choice, I would teach to all classes of people all forms of human knowledge, both those that lead to immediate results and those that appeal strongly to the intellect, regardless of professional ends, and that is why, as in the next chapter, I have argued for that unity in education which would neglect nothing that is really valuable to our civilization in the education of the masses of the people.

Not that all will react equally to the culture phase of education, because they will not. Some fail to react even when possessed of personal ambition to excel, just as many a man with no voice essays to sing, to the huge satisfaction of his own unattuned ears and to the torture of all who hear him. Even this is laudable in the effort, and the advantage to the performer is doubtless worth all it costs to the auditor.

But some will react, for this reaction to the highest intellectual conceptions is a personal matter quite independent of occupation or surroundings, and we may have, if we will, farmers and mechanics and industrial people generally in large numbers who appreciate as well as any other class of people the highest mental processes of which mankind is capable.

A great sculptor found, quite by accident, a little boy molding images at the mouth of an Illinois coal mine. He took him to his studio, and this miner's son is now one of the world's greatest masters in molding children's features in clay. Here was a genius born among the masses.

If only the education of industrial people be rightly balanced and the world of culture be opened to their vision, then will their leisure hours be made profitable, for there

is nothing about labor or even about common things that makes impossible the loftiest intellectual achievements.

It was the shepherds on the Judean hills that evolved the highest conception of existence and of God that has ever been announced, — all as they watched their flocks under the starry skies and wondered at the mystery of life ; all in the leisure moments of their needful employment.

There is another form of culture, however, that I desire especially to emphasize, and that is the intellectual development that comes to the individual as the direct result of doing extremely well whatever is undertaken, even though it be the most common things of everyday life. It is the doing of common things in shiftless ways, through dire necessity, under mental protest and with intellectual stagnation — this is what degrades ; this is the degradation of labor ; and it is inevitable to the uneducated and unskilled who regard labor only as a disagreeable necessity to be avoided if and whenever possible.

But to him who looks upon labor as an opportunity to achieve results ; to him who sees the end from the beginning and labors to realize his ideal ; to him who sees the results of his achievement as a part of a harmonious whole ; to him who develops the thing he does until it discloses its proportions and perhaps its beauty — to him labor is elevating and the products of his labor are cultural.

The farmer who produces the finest horse that ever trod the turf could not do it unless he saw a mental picture in advance and dreamed a vision of what he would produce generations before he found and brought together the material that would produce it. Is not this art as high as that which puts the picture on the canvas after the farmer had produced the original as a living expression of his own dream ? Yea, verily, and if we are to have fine horses, we must first

have farmer artists to produce them, for, look you, the horse existed before the painter ever put him on the canvas. The original was first of all in the breeder's mind a mental vision. Yes, if we are to have great things, then men of every occupation must dream dreams.

Here is a pile of soiled and crumpled linen, — a most forbidding prospect. Who shall bring back again the beauty of pattern and design that are now obliterated? Not the menial, surely, who sees only the tumbled pile of dirty lace. It will be the artist, either born or trained, who has faith in the prospect and who sees through it all the picture that was in the mind of the designer of the patterns on which the lacemaker and the weaver wrought. This person, with results in mind in advance, by processes well understood, removes the filth of the street, and by cunning method brings out again the pattern and restores the picture, just as the sculptor chips away the outside stone that the statue within may appear. Is this menial employment? Well, if it is, it can never be performed by a menial, because no such person can appreciate the possibilities; hence much bad sewing and worse cooking; hence cleaning that does not clean, hence disease, unhappiness, and death with its trail of wasted racial resources.

Nor would I have my reader overlook the fact that the culture that comes from doing in the best way possible the everyday and common things of life is the best preparation possible for an appreciation of that other culture that is purely intellectual, but which can never be properly appreciated except by him who creates, who produces in some fashion or other the expression of an ideal, whether the ideal be a picture upon canvas or in stone; or whether it be upon the landscape in the figure of beautiful trees and flowers or of bountiful crops; whether the ideal be teeming

thoughts in words that will never die, or whether it be in the flesh and blood of an improved animal; whether it be in daily duty of a high and unusual order or of a common and ordinary kind, the individual must be an artist himself or his culture is only a veneer.

To the writer, culture is the best expression of the highest faculties of man, with considerable stress upon the word *expression*. I cannot see much culture in mere ravings upon the achievement of others or even in meditation upon lofty thoughts and purposes *unless that meditation leads to action*.

Mere information is knowledge static, but the highest product of education is an informed and disciplined mind *at work*. So it seems to me that real culture, the only culture at least worth aiming at, is the highest possible exercise of the finest human faculties, working not for immediate and utilitarian ends, but for the best of which the man is capable.

In an earlier chapter I alluded to the fact that the so-called industrial people are in possession of about all the real leisure of the race. This is not only because of their overwhelming numbers, but also from the fact that outside of working hours the relaxation of industrial people is more complete than is possible with those of any other class.

If the time of this relaxation be not profitably employed, then it is the fault of the system of education by which the industrial people are prepared for life. There is nothing about ordinary employment that is degrading or that is adverse to the highest ideals; on the contrary there is much that is of itself elevating and stimulating to the development of the very best that is in man, all of which will be evident to any one who takes the pains to study carefully the character and the personality of country people or those

of any other industrial class that has had even a fair chance at education and a reasonable protection against overwhelming and wholesale influences tending to inevitable degradation.

It is not at all uncommon to find great readers and great thinkers, even philosophers, among these people. They have the best opportunities for culture of any of us if only their education affords them a decent outlook upon the world, and somewhat broader than their earning powers.

It is a mistake to assume that all the culture is in the dreamer's mind, or that it is unattainable by him who meets fairly the world's demands. One of the things that is needed now is to put more of idealism into common things and more of culture into the common men, whom the Lord especially loveth as he made so many of them.

The man that builds my house : shall he be merely a sawer off of boards and a nailer on of shingles, or shall he have and feel an intelligent sympathy with its architectural plan ? If he have that sympathy, he will feel it as he works, and he will unconsciously put it into his work, and we shall have the plan fully executed and the house will become a habitation full of human thought in its execution as well as in its design. If he does not feel that sympathy with the ideal of the architect, he cannot put the best into its execution, and the result will give the impression of an ideal badly realized and badly executed. The common man may not be able to originate and create, but if he is properly educated, he will feel the artistic thrill in execution, and both he and his work will be the better for it. This, too, is culture.

Why should not and why may not a farmer be a student of language or of economics ? Why may he not be an

authority upon some particular period of ancient or modern history? He has more leisure than any other large class of independent people. His occupation should not absorb, and indeed cannot absorb, all his time. Moreover, if he regards it rightly and is properly educated for it, his farming broadens him and does not narrow either his outlook or his mental capacity.

Why should not the craftsman generally live a part of his time in a world other than the one wherein and whereby he earns his bread? If he does, two things will happen: first, he will be a better and a safer man; second, he will drive his business more successfully and his craftsmanship will be of a higher order.

All this I concede and most thoroughly believe. The great fault and failing in our education is that we have foolishly assumed that education for culture's sake would necessarily and mechanically secure efficiency, and when it did not, we have again foolishly and hastily assumed that there is something about industrial activity that is antagonistic if not fatal to culture. So we have surrendered the industrial people as such to a hard life of toil, barren of the better things of life, hoping only to deliver as many as possible from their fate as brands snatched from the burning. Refusing to be delivered over in this way, the industrial people are proceeding to set up a system of education of their own over against the old, with the very natural but fatal defect of sneering at culture, surrendering everything to present needs.

It is for educators to come to the rescue and put something of culture into industrial training or else to graft industrial education upon our school system, producing a kind of education adapted to turn out people that are both efficient and cultured.

Of these two possible procedures the author regards the latter as in every way preferable for reasons that will be more fully stated in the chapter on Educational Unity, and hence it is that these pages are addressed to those of the old school, hoping to induce the most experienced educators to have more regard for efficiency and thereby adapt our present system of education to the needs of the industrial masses. If these pages were addressed to the industrial people in the hope of influencing the education that they would of themselves build up, then, under such conditions, I should attempt to attain the same ends by laying stress upon the need and value of culture, not as the whole but as an essential ingredient of the mixture that we call the educational course. Thus I should emphasize the weakest spot in either system, as I am now doing here.

I know a small city with great clay-working interests within its borders. The call is sharp for men sufficiently skilled to turn out crocks and jugs, and the best boys are eager for the time when they, too, can go into "the works" to earn money like men. They will even leave the school in order to do it. *What wonder when the school is as silent on all matters of clay working as if the factory and its interests were a thousand miles away!* Now if the school should recognize the facts of the community life and teach something of ceramics, even ever so little, the inevitable consequence would be :—

1. An improvement in the quality of crocks and jugs in the factory.
2. An improvement in the men that earn their living by making crocks and jugs through a higher and more intelligent purpose and through association with a more artistic product.
3. If a clay-working genius is ever born into that com-

munity, — and he will be sometime, — then he will promptly be discovered and will arise to enrich the world of art and not be lost to his generation and to time in the shape of a genius making jugs.

If in addition to all this the clay be found to be truly superior, then in all likelihood there would develop in time a ceramics department in the local school and the little city become known the world over like Limoges for its beautiful as well as its useful product.

If the masses of people as they labor, think and also dream, and if they think and dream about their labor, then will their labor be uplifted; then will the common things of life be beautified, and after we have learned to beautify the concrete that is all about us, then shall we know how to spiritualize the ideal and the abstract that is within us through literature, philosophy, and religion.

The readiest avenue to culture is by way of the common things well done, and the masses of men should find in their daily duties the means of their own uplift. Culture and refinement are not for the few, they are for the many; and the road to their achievement must not be made narrow or unduly tortuous.

The human animal is what he is because of his inherent tendency upward, a tendency that is not the peculiar property of a favored few, but the common possession of the mass of the race; for our race, like all others, owes its progress not to the few but to the many.

I invite the reader to let his mind dwell upon the ultimate consequences of two different educational policies regarding this matter of culture: —

1. A policy in which the masses of men are unendowed with the opportunity of idealizing beyond the day and its duties as a means or maintaining existence. What is the

consequence, first, to them as individuals, second, to the state, when we know that one third of their working hours are employed neither in labor nor in means of self-improvement?

2. Over against this a policy of education that recognizes that a man should be a skilled workman; first, in order that he may be sure of a livelihood, and second, that the world may be well provided with needful things; but that also recognizes that the man himself is capable either of elevation or of degradation and that he has on his hands about one third of his time that will be devoted to one or the other, — a policy further that recognizes that the end and aim of existence is not to live but to develop man who is made in the image of God with a divinity that will assert itself if it can.

With culture of this sort I am deeply sympathetic as I am out of sympathy with either extreme that would on the one hand sacrifice the man to his daily toil or on the other hand proceed upon the unjust assumption that culture is only for the few who by some fortunate circumstance or superior cunning are enabled to avoid and shirk their share of the world's work only because they have found a way to eat by the sweat of another's brow.

So, culture is for the race; for the man that God has made in his own image. And who are we to shape our policies of education upon the theory that all men are not created equal? It is rather for us so to shape these policies that by the process of education every man may realize in his own personality the full measure of his capacity as endowed by the Creator and not as limited by man.

With this I hope that the purpose of the writer will at least not be wholly misunderstood and we may pass to the more detailed consideration of what is involved in education for that kind of efficiency which fosters and does not sacrifice culture.

CHAPTER VI

UNITY IN EDUCATION¹

I would have it so that in a company of American citizens one cannot tell by the dress, the manners, or the speech what is the occupation of the individual. To this end let there be few schools with many courses, not many schools with few courses.

No fact in the educational situation is clearer than this and none is more significant: Industrial education is coming into its own and it is here to stay. The ninety-five per cent are to be educated and educated in terms of their own activities. This means a well-defined system of education in some form, designed and administered for the good of the industrial masses, and of all other classes as well. If this cannot be accomplished, then each will suffer separately and all will suffer together.

There is a system of college education designed for the development of the industries and the benefit of industrial people, but there is no system of *secondary* education so designed, except that here and there a few feeble attempts have been made, sometimes in connection with existing schools, sometimes separately.

The existing system of secondary schools, though universal in its invitation to students, is built upon old-line policies of restricted human interests. They cannot by these policies appeal to the masses because they ignore the immediate and personal interests of the common man. If any man is to be educated, that education must touch him

¹ See also address at the N. E. A., Denver, July 8, 1909.

first of all at the point of his daily activities — in general his occupation; and in order to reach the industrial people as such we must have a form of education designed for them and with special reference to the industries upon which they depend for their existence.

This can be attained in two distinctly different ways : it can be attained by broadening the existing system to include the industries and the interests and needs of industrial people ; or it can be accomplished by a separate system of schools. Either road is open now, but both roads will not be open long.

If the former alternative is to be taken, the academic people must take the lead, and they must do it now, for the industrial people are exhibiting numerous signs of a disposition to take the matter into their own hands. If they do that, they will establish separate schools of industry in which they will be encouraged by certain educators, and we shall have the spectacle of the ninety-five per cent seceding from the five per cent ; driven out, not by numbers but by tradition, to the great disadvantage of both parties, and the ultimate sacrifice of a large body of knowledge that ought to come into the possession and enrich the lives of the masses of men of all occupations.

So readily and completely can the highly specialized industrial school meet the immediate needs of industrial people, and so seemingly complicated is the problem for the existing secondary school to expand and take in the industries, that it is worth while to consider somewhat in detail the ultimate consequences of the separate school, particularly with respect to agriculture, with which the writer is most at home, confidently believing that what is true of agriculture and her people is in general true of the other industries and their people.

Careful consideration of this matter at this time is the more fitting in view of the fact that federal legislation is proposed, whereby there should be in every ten counties of each state (not more than fifteen or less than five)¹ an agricultural high school in which should be taught agriculture and domestic science.

Now while I have devoted my life to agriculture and am a partisan advocate of industrial education, yet I am a firm believer in the theory that the purpose of all education of every kind is *efficiency*—efficiency in something—in anything that will contribute to the sustenance, the development, or the happiness of man, and I can see no good and sufficient reason why a system aiming at a particular kind of efficiency should be cut off and separated from other systems aiming at other forms of efficiency, particularly when human life is enriched in proportion to its capacity for achievement and enjoyment. On the contrary, I can see many reasons why such a separation is not only unnecessary and undesirable, but altogether inadvisable and even dangerous. Among the many reasons that might be given I hastily and but imperfectly sketch the following, with special reference to agriculture and country people:—

1. Separate schools can never be so good as larger schools with separate courses, ministering to a variety of people. This is axiomatic for both economic and pedagogic reasons. No school designed to minister to a single class of people and to a single group of interests can ever be so well equipped in the fundamental arts and sciences—in chemistry, biology, physics, history, literature, economics, and the so-called humanities generally—no such school can be so well equipped as can one designed to minister broadly to a variety of interests. Indeed, even if the attempt is

¹ See draft of the so-called Davis Bill.

made and a wide range of subjects taught, these same subjects will of necessity be studied and taught from a comparatively narrow standpoint.

Every teacher knows and every investigator knows that in order to develop a subject well, either for purposes of instruction or of research, it is necessary to establish and maintain a favorable atmosphere for that particular field of mental activity, and this atmosphere is at its best only in the presence of students *interested mainly in that subject*; that is to say, there is no more favorable place in which the farmer may study chemistry than in company with others, not merely of his own kind but of those who believe that chemistry is the greatest thing on earth.

There is no better place for the farmer to study history and to learn to see himself as others see him than where he studies history in company with those whose chief interest is not in agriculture or in engineering or in teaching, but rather in history itself, by which we study the true significance of world movements of all classes, and come to know things past and present in their true perspective. That is to say, every man ought to be educated in an atmosphere not especially prepared for him and his own kind, but in an atmosphere and an environment much broader than his own interests. In this country, if our democratic institutions are to be preserved, and if our people are to labor together in peace and understanding, all classes must be educated in an atmosphere at least as liberal and as broad as *all* the interests of any single community can make it.

In saying this, I do not overlook the fact that the separate agricultural school has certain distinct advantages. They are the same advantages that are enjoyed by any other industrial school, or even a theological seminary,

arising from the comparative simplicity of the educational contract they undertake. It is a fact, of course, that any school founded, manned, and equipped to do a single thing and minister to a single interest gains much in directness by its simplified problem, and by the direct methods it naturally employs. But it loses in breadth and relative value, as has been indicated, and the best proof of it is that none of the separate schools yet founded offer as much even in science as the near-by high schools; and what they achieve in the end is industrial training rather than industrial education—the training of the operative rather than the education of the citizen.

Sir James Bryce tells us that the chief purpose in studying history is to throw light upon our present action and future policies, because in a large sense history does repeat itself. In this connection it is well to remind ourselves that agricultural and mechanical education started in this country in separate colleges. This was necessary because of the attitude of old-line colleges of that day concerning industrial education. But that attitude has entirely changed, and to-day these two fundamental industries are strongest, both in instruction and research—not in the separate agricultural and mechanical colleges, but in our greatest universities, where all forms of education are imparted, and where American energy and American citizenship are trained in a cosmopolitan atmosphere. Not only is this true, but the proportion of agricultural students who return to the farm is greater from our universities than from our separate agricultural colleges, to say nothing of the masses of city boys directed countryward.

So I return to my first assertion, viz.: that both from the nature of the case and from the experience of the past we may fairly conclude that separate schools are inferior

schools; that they lose more in breadth than they gain in directness, and can never rank in real service with that other type which ministers to many interests and gains directness by its distinctly separate courses.

2. Separate schools will tend strongly to peasantize the farmers. To undertake to train the children of farmers in a system of inferior schools, such as these must inevitably be, with little knowledge of and less regard for the affairs of other people — such an attempt, if it succeeds, will peasantize the farmers in America more rapidly and more certainly than they were peasantized by other causes in Europe generations ago.

To segregate any class of people from the common mass, and to educate it by itself and solely with reference to its own affairs, is to make it narrower and more bigoted, generation by generation. It is to substitute training for education and to breed distrust and hatred in the body politic. Knowledge is necessary to a just appreciation of other people and their professions and mode of life; with this only can a man respect his own calling as he ought and love his neighbor as he should. We cannot segregate and make an educational cleavage at the line of occupations, except to the common peril.

We may one day need the real trade school in agriculture — the form of instruction that aims at training rather than education; at information rather than development; at mediocrity and below rather than mediocrity and above. This time may come, but it is not here now, and our greatest present need in agriculture is to educate the landowners rather than their hired operatives; to educate a class of people upon the land that are in every way the equal of their compatriots in the city or anywhere else.

The European peasant belongs to a class whose eco-

conomic and social status was fixed generations ago by a variety of causes, mostly political; and when the problem of universal education came up for solution there, the only way in which the benefits of education could be approximately enjoyed by all the people was to found a system of peasant schools which should secure results with a maximum of manual training and a minimum of mental education. How difficult of achievement was even this step will be appreciated, for example, by any student of Irish industrial history, or by any one who has read Sir Horace Plunkett's "Ireland in the New Century."

When these times come to this country, if they ever do, I fervently hope that by that time our secondary schools will have become so well organized and so broadly equipped as to handle the trade school together with that higher form of industrial education which now engages our attention and which we are trying now to provide.

The American farmer is not a peasant. He has never yet been peasantized, and I fervently hope he never will be peasantized. He belongs mostly to the ancient and honorable Puritan stock descended from that great middle class of England that came to this country to establish and maintain, not aristocratic, but democratic, institutions. This is the stock that first felled trees, then built churches and schoolhouses, and prepared to govern themselves and to found a nation and a race whose institutions should rest on the intelligent activity of all the people.

This stock has never been exceeded, not only for hardihood and industry, but for its appreciation of the benefits of higher education and of the better things of life. This people held three things to be cardinal virtues—to labor, to go to church, and to go to school. This is the people that founded Harvard College in the wilderness. It is

from stock of this sort that the typical American farmer is descended, and I would see him so trained and so educated as to remain true to his type for all time. This will require a training and an education that cannot be imparted by any form of European peasant school, however modified, but it will require the best that modern human ingenuity can devise. This great need will be met, if it is ever met, not by old, but by new systems of education, and they must be wrought out by ourselves to meet conditions here.

3. To educate the children of different classes separately is to prevent that natural flow of individuals from one profession into another which is in every way desirable both for public and for private welfare. If the children of farmers are systematically put into schools where only agriculture is taught, many a good lawyer and many a good citizen will be spoiled to make an indifferent farmer. Boys do not necessarily inherit the father's profession. In a very large sense their natural faculties come from that common stock of human characters that constitute the heritage of the race, and the individual has a right to an education that is broader than the occupation and the narrow environment in which he was born. True, he should be educated *through* and to a large extent by means of his environment, because that is the compass of his own experience; but if we educate him *within* his environment, we dwarf him in the process, and we do not truly educate him.

Again, many a boy, city born, has the instinct to get back to Nature. He should have at least a fair chance to do so. Because a girl is born in the country is no sign in America that she should be a farmer's wife; nor if she is born in the city, is it a sign that she should not. My plea is, in the name of common sense and American citizenship,

educate all these people together in one school, with a curriculum varied enough to fit for more than one occupation and more than one mode of life, to the end that a man may follow the occupation of his father or may change it, as he pleases; but whether he follow or whether he change, he shall do so intelligently, and for a reason, and in either case he shall have some knowledge of and sympathy with the occupation and the life of his neighbor.

It is said that if you give a bright boy a good education and broad associations, he will leave the farm, and the only way to keep him there is to train him to be *contented* with a humble life. That false theory of education was exploded long ago. Experience has abundantly shown that education does not necessarily result in taking people out of the country except when that education is one-sided and faulty, as witness the graduates from some of our greatest universities. I have no sympathy with the plan of keeping boys on the farm by the blindfolding process.

There was a time, now happily past, when the schools ignored not only agriculture but all industry. Then unthinking teachers advised bright boys and girls to "get an education, so they would not have to work." This sort of doctrine found fertile soil in the young of hard-working, self-denying pioneers, and it was not strange that most young men who had much contact with the schools were lost not only to the farm but to industrial life. Then it was that men saw the best of the young crowding into professions already overcrowded, and they noted with sorrow and regret that education served principally to draw men away from the useful callings and to pile them up like salmon in the spawning season where they were not needed or wanted, and where little awaited but their own destruction.

The country is, and always will be, the great breeding ground for the nation, and the consequence of this insane movement cityward of the choicest men and minds could have had but one final effect—to put the brains in the city and the brawn in the country. It was not strange that under conditions such as these thinking men first denied higher education to their young because of its inevitable consequences, and then came to demand a form of education that should really serve the needs of industrial people as well as those of professional people. In this way arose the separate industrial schools, but later experience has shown that one extreme is as bad as the other—that industrial training without education is but little better than education without industry, and that both will inevitably result in a most unfortunate sorting process; both alike will prevent that natural flow from one profession or mode of life to another, so essential to meet the natural desires of individuals, and to secure that homogeneity of population without which institutions such as ours are not long safe, or even possible.

Though it is true that educators did not lead in the movement for industrial education, they were quick to see its significance, and to-day our greatest educators and our best teachers are the most earnest disciples of the doctrine that a system of universal education should fit for *all* the needful activities of a highly civilized race, to the neglect of none and to the prejudice of none.

This is a stupendous problem. Think of its new complications! In the old days all that was necessary was to maintain whatever schools could win support and teach the things most easily taught without much regard to the consequences. In these days of universal education we must teach what the world needs to know for *all* its essen-

tial activities, and we must so conduct our schools as not to greatly disturb the economic or social balance of things; so conduct them that the overflow from one occupation or class shall be naturally compensated by a corresponding inflow of equally desirable individuals from others — all of which is necessary if universal education is to be an unmixed blessing.

4. Secondary schools devoted solely to agriculture would of necessity cover so much territory as to require the students to board and room away from home. This for students of the high school age is unthinkable. Every boy and every girl in the early and middle "teens" should sleep every night under the father's roof, and this can be if a community establishes a single school capable of catering to all its needs, and does not insist upon educating one class here and another there, compelling long journeys to get to the right school. A single agricultural school in ten counties, or in five counties, or in one county — think of it!

The problem of secondary education is largely the problem of the fourteen-year-old, and we should never rest easy till every farmer's boy and girl may go to the *nearest* high school, and there find instruction not only in agriculture but in the other industries and professions which concern the community, and after having lived the day in an atmosphere broader than their own studies go home again at night to dream of what a great thing the world is and to wake with an intelligent appreciation of the place in it which they propose to occupy, for its high school is the place in which the individual should "find himself."

5. Agriculture not only needs contact with other interests, but they need contact with agriculture. Every one who has had experience with the introduction of agricul-

ture into our state universities will bear witness that the benefits of association are mutual.

In the university which I have the honor to serve, our agricultural students not only get a training and a breadth of vision which they could never get in an institution devoted solely to their own interests, but their presence on the campus is of distinct advantage to the other students. Their directness and their practical methods of work are wholesome to the institution, at least they are so declared by the non-agricultural professors and students alike. In every way, as I see it, much is lost and nothing gained by separating the students of different classes and educating them apart, each in the occupation of the father.

Nor would I put all the so-called industries in one class of schools and the professions in another. In a large sense all study is professional, and in a very large sense indeed it is also industrial. Some portion of the training of every individual should be industrial, even manual, and another portion of the training of every individual should be distinctly mental until habits of thought are formed quite *independent of material activity*. For these reasons, which are fundamental, I would not separate industry from any of our schools. I would make it an integral part of every curriculum, its proportion and character depending upon the prospective profession of the individual ; but above all I would have the essence of all occupations, or at least of as many as possible, represented in the same school.

My point is, if all these subjects and professional points of view are offered in the same school with more than one avenue into life, then the opportunity is presented for the individual not only to make a choice but also to acquire professional knowledge and skill without becoming narrow as a man. If farmers and lawyers and editors and engi-

neers and artists and merchants are educated separately, they will either hate or despise each other, or both; if they are educated together, each will acquire, besides proficiency in his own line, a sympathy with others that comes so easily with that partial knowledge and acquaintance through daily association in the school age, and that comes with so much difficulty in any other way. A farmer being educated at a great university is a little different man because law and economics and engineering and Greek are well taught in neighboring buildings, even though he never take one of the courses laid down in the catalogue. The very fact that they are taught, and that he associates with those who take them — all this has its effect, and in a thousand ways a man absorbs something out of every activity that is going on about him. My point again is that this is the only adequate atmosphere in which to educate an American citizen, whatever his occupation is to be.

6. To establish separate schools for agriculture is to injure the development of existing high schools. These schools are not "city schools" in any proper sense of the term. Most of them are located in small towns and villages in a distinctly rural environment. To denominate all these as "city schools," to be devoted solely to the interests of city people, is as absurd as it is unjust to them. These schools, like all others, have the natural right to minister to their constituency, whatever it is. But if agriculture is to be put off into a separate system of schools just because the high schools have not yet taught the subject, it will be easy, later, to cleave off another industrial slice, and again another until the remnant that remains will be suited to nobody's need, unworthy alike of the school and the community it was established to serve; and instead of an organized system of effective education

we shall have an incongruous medley of separate and independent schools, each serving its little clientele in a narrow way without much regard to the public good — all of which is against the true spirit of universal education.

The American high school is a new institution. It has arisen from our determination to make education truly universal. Now, universal education means that all the people shall be educated, and in such a way that all the activities necessary to a highly civilized race may develop and go forward. Only a small per cent of the people will ever go to college and *the experiment of universal education will be tried out in the field of the secondary schools*. These, more than the colleges, will prove to be the agencies by which the masses of the people will get their training and their trend. For this reason the future welfare of these schools is to be specially safeguarded ; but every subject and interest that is taken away from the high school in the present stage of its development lessens by that much its power to serve the community, and by that much it is a menace to its life and efficiency and a check if not a bar to its further development.

7. Separate schools in agriculture will check the extension of high schools into country communities. High schools started first in the cities, it is true, but they are making their way rapidly out into the country, a tendency that is to be encouraged, more especially as they are showing a remarkable disposition to respond to their environment. If the interests are not divided, it is entirely possible for any community, without going beyond driving limits, to throw all its energies into a school of secondary grade and make it capable of truly reflecting all its varied interests. This has been found impossible where secondary education is primarily under ecclesiastical in-

fluence; it will also be found impossible if interests are to be divided and as many separate schools established as there are interests to be served; but if they will stay together and solve their problems as a unit, it is possible for every prosperous community to give its young people at their very doors what is to all intents and purposes a college education.

8. It is unnecessary to found separate schools in order that agriculture shall be taught, and well taught. I am enough of a partisan for agriculture to demand what is needed for its development; to advocate, if necessary, separate schools for this purpose, even if they should result in reducing the scope and curtailing forever the full and possible development of the high school. But it is unnecessary to resort to this expedient in these days. It was necessary to do so in an early day because of the indifferent, not to say unfriendly, attitude of the schools of the time, all of which were organized and conducted on the classical basis in order to fit for the so-called learned professions. Such schools had little knowledge of and less sympathy with industrial education, and to get a start it was inevitable that separate schools should be established to do what existing schools would not in those days undertake.

But conditions are changed. We are living now in a new age — in an age which recognizes that the highest purpose in education is to get ready to live; that real education is active, not passive; and that its fruitage is service, not personal gratification. We are living in an age which recognizes that all forms of useful activity can be made yet more useful by the knowledge and the graces of education; and that the man himself is bigger than his occupation — bigger than that narrow avenue of public service

through which he obtains his livelihood and discharges the ordinary debts to Nature. We have *all* learned this lesson, and by this time we ought to have learned it well.

It is true that education for industrial people, and after that education in and for industry, arose from the masses and was forced upon the schools. I do not forget all this, but I beg to call attention to the fact that that early demand was a selfish one, — a righteous selfishness, it is true, but yet selfish. The masses wanted education for their own purposes, and it caused no little jolt to the educational juggernaut when they proceeded to get it. But when they had time to recover their breath, educators — real educators — began to take stock of the situation, and they have commenced in these days a new policy of education in the world; a policy which if followed out will develop all our resources, both industrial and intellectual; a policy which will take care of your personal needs, and mine, and yet which is as broad as humanity and all its activities. This new policy is working successfully in our great state universities where men of all classes, aims, and prospects are educated together from the standpoint not of private interest but of the public good. The same policy has commenced its work in our secondary schools, and I am anxious above all other considerations that these schools should solve this whole problem for their communities; besides, I know educators well enough to believe that they will earnestly undertake to do it if they are intrusted with the duty, which is also a privilege.

These modern schools must have a fair chance. They are new institutions; they have hardly been in the field a half century, and how they have grown! There are literally hundreds of them that are giving a better education than colleges gave a generation ago, and they have only

commenced to serve the people. If they have not yet solved all the problems and taught all the subjects the people need, it is no sign that they cannot or that they will not, and they should be given the chance. Every new addition to an educational institution not only serves a new public need, but it enriches all that was before. All the modern secondary school needs in order to serve us perfectly is men and money and time to learn how.

There is no longer an "issue" in education — certainly not concerning the fundamental industries. I am told that in certain remote sections of the country some people are still fighting the Civil War, but most of us know that it is over. The old issues are settled and dead and left behind. New ones have arisen to command our attention, and it is unworthy of ourselves to expend our energies on lines of effort long since rendered obsolete.

Yes, the old issues between the classics and the industries are dead and the sooner they are forgotten the better. I have been through this educational conflict myself and I know what it is ; but even the old soldier who insists upon fighting the Civil War over again, to-day, will get no audience. New problems have arisen with the new generation, and this generation proposes to stand on whatever has been gained before and expend its energies in forward movements. We do well to imitate its example in this matter. The new issues are constructive.

9. This demand that agriculture be taught in the public schools is but part of the great modern movement for industrial education. Whoever has lived close to the great heart of the common people and has had his hand upon the pulse cannot fail to have felt the throbbings of this new impulse for more than a generation, or to have detected its first

feeble flutterings an hundred years ago. Whether he has had his ear to the ground or not, whether he has lived close to the heart of things or away in the upper atmosphere, no man can now be ignorant of the great fact that a change is coming over the spirit of the times regarding educational ideals; a change that is fundamental, and whose shadow or whose light, whichever it may be, is full upon us and can no longer be averted or ignored.

When each community had but one or two educated men, — the minister, the doctor, and perhaps the lawyer, — it did not greatly matter what their education might be like; but when everybody learned to read, and to think, which was inevitable, they quickly saw that the system and the subject-matter of an education suited to the office and the study were ill-adapted to fit men for the farm and the shop, but exceedingly well-adapted to unfit them. They, before the educators, learned that the benefits of education were capable of being extended to all the affairs of life, material as well as intellectual.

But, as has been repeatedly noted, educators soon caught the true spirit of the new demand and were quick to respond. They have responded so well as to discover that in the last analysis there is an intellectual basis for all industry and an industrial basis for all education that is safe for everybody to use; they have shown that the names of various occupations are but names for different forms of activity and service; that all fundamental occupations are learned professions, and that any form of education that fits for nothing in particular is worse than useless, even dangerous.

So we must look at this matter broadly. Our problem is but a part of a more general one; moreover, this general problem of how to educate for all the useful activities is

the very problem upon which all educators are busily at work, and they are solving it inch by inch and day by day. It is for us to stay with the crowd and be in at the finish.

The American high school is a form of secondary education that has arisen, or more properly speaking is arising, to meet this new demand for universal education. Agriculture, and industrial education generally, have found their true place in the universities. The next step is that they should find their true place in our secondary schools, where, after all, our attempt at universal education will render its greatest service.

10. If industrial education is to be conducted in separate schools, it must not be forgotten that in losing the industrial people it is the ninety-five per cent that is cleaving off; that the first effect of this loss is the reduction of the high school to a girls' school; that the next effect is the loss of financial support, and the last stage is the degeneracy of the high school to a college preparatory school with no message of its own to the people.

Reasons might be multiplied indefinitely, showing why it is wiser to go forward, meeting our educational necessities together, but they would all be of the same general tenor; viz.: that our educational problem is after all a single problem — complex, puzzling, and all that; but it is a single problem after all, and we should stay together and solve it.

If the high schools were as indifferent and as antagonistic toward industrial education to-day as the colleges were fifty years ago, I would raise my voice loudest for a separate system of agricultural and other industrial high schools. But they are not indifferent, they are interested; they are not antagonistic, they are exceedingly friendly. Agriculture has found its place in our American system of

education, so far as colleges are concerned, and its place is in most honorable company. It remains to find its place in the high schools, and when that place is found, may it be equally honorable and equally favorable with the place it occupies in our great universities where it has done so well, and may industry in general enjoy the same experience.

In a large sense we are at the parting of the ways in this matter. The demand for education in agriculture has come to stay. Indeed, it is but a part of a larger movement for industrial education generally; meaning by that, education with a view to some form of useful service in the fundamental industries as well as in the so-called learned professions. This larger demand also has not only come to stay, but it has the sympathy and earnest support of the masses of the people and the very large majority of our best educators. The only substantial difference of opinion is as to the best method of procedure, whether by a series of schools of as many distinct types as there are occupations and interests, or by a single system of schools with separate courses. Which shall be adopted as the final American policy of education is a matter before us for discussion—and there is at present no deeper educational problem—and as has elsewhere been remarked more depends upon what we actually *do now* within the next five years than it can depend on what we think and say and try to do twenty-five years from now.

This issue is upon philosophies of education so widely different that the choice once made will be final, and the consequences well-nigh ir retrievable. I am one who firmly believes that within the next ten years we shall decide for all time whether we shall reap the full fruits of our thoroughly unique educational opportunities in America,

or whether we shall needlessly follow in the footsteps of Europe, where social distinctions were established, and the peasant classes fully fixed, long before the modern age of universal education was thought of.

Personally, I do not believe in that philosophy of education which would establish separate schools for the various industries and occupations of life. I greatly prefer that theory of social and industrial development which would establish and maintain a single system of schools wherein the people of all classes should be educated together, distinct courses being framed and conducted for the benefit of each in so far as the interests differ from those of the common mass or of other professions. And so shall we be one people. To this end let us be wise and preserve our educational unity as we work at the solution of our difficult problem of universal education.

PART II

AGRICULTURAL

THE preceding pages have necessarily been written from the agricultural standpoint, because whatever knowledge of education I may possess has been acquired by an intimate contact with agricultural people and a long experience with their struggle upward to the attainment of an adequate and suitable education.

I have, however, for the most part avoided detail, because the purpose was to confine attention to the general policies of education in that region where the industrial and non-industrial meet; where occupations shade into each other by imperceptible gradations and where one man's vocation becomes another's avocation. Any one, therefore, who might chance to scan these pages for the purpose of obtaining a hint as to practical methods of procedure in introducing industrial courses into existing schools in order to secure the educational unity herein advocated, would be disappointed unless a little space were devoted to that end. I have, therefore, added Part II with the hope of being able to show how agriculture at least may make its way into existing schools without detriment to other courses, but vastly to their advantage.

CHAPTER VII

AGRICULTURE IN THE HIGH SCHOOLS

"Is agriculture a college subject or is it a high school subject? Our forefathers conducted the discussion as if it were one or the other. In these days we may answer, — it is both."¹

AGRICULTURE has earned an honorable place in some of the greatest universities in America, where, with respect both to research and instruction, it is beginning to compare favorably with other professional and scientific subjects.

It will never, however, really reach the masses of the people in an adequate way until it attains in the high school the same relative rank it has already attained in the college, nor will the work of its extension be fully done until in some form its influence has permeated into the grades.

The next step, however, is to introduce agriculture into the existing high schools just as it has come in beside other and older subjects in the state universities, and it is no stretch of the prophetic imagination to predict that this great study will vitalize the high school as it has helped to vitalize the universities wherever it has been introduced and properly supported, and from these schools it will percolate by natural process into the grades.

It has commonly been assumed that the place to begin

¹ Extract from an address of the author upon the History of Collegiate Education in Agriculture, read at the meeting of the Society for the Promotion of Agricultural Science, at Lansing, Michigan, June, 1907.

the further extension of agricultural education is with the elementary country school. The writer does not share this opinion, but his feeling is that the strongly organized high school is the next place in which to undertake the work of agricultural education. This opinion is based upon the following reasons :—

1. The students are older than those of the grades and are beginning to think about things vocational.

2. The teaching power is stronger and the work can be better done, while that which is experimental will be in the hands of more experienced teachers better capable of making necessary readjustments or amendments as to methods.

3. The Experiment Stations have provided a mass of material entirely suitable for secondary school purposes, while the literature for the elementary school yet remains to be made.

4. The colleges of agriculture have tested a mass of material and methods and found by experience what is most successful from the teaching standpoint. Much of this can be carried over bodily into the high school with only such modifications, eliminations, and change of emphasis as a good secondary school teacher with fair knowledge of the subject will know well how to make.

5. The same energy and the same teaching force will accomplish vastly more at this point than in the grades. Not only that, but activity here will in a short time produce in the high schools as well as in the normal schools a class of teachers who can transfer this work to the grades with prospects of success ; whereas to begin in the grades presupposes a class of teachers that does not at present exist and for whose training there is as yet no adequate machinery.

Before discussing details further, let me say that when I speak of teaching agriculture in our high schools, I mean *agriculture*. I do not mean nature study, nor do I mean that some sort of pedagogical kink should be given to chemistry or botany or even geography and arithmetic. Let these arts and sciences be taught from their own standpoint, with as direct application to as many affairs of real life as possible; but let chemistry continue to be chemistry, and let agriculture introduce new matter into the schools and with it a new point of view. Nor should this new matter be "elementary agriculture." In some ways I could wish the phrase had never been coined. What is wanted in our high schools is not elementary agriculture, but elemental, fundamental agriculture. For this purpose we should select out of what is taught in our colleges not only those phases of agriculture which are adapted to use in the high school, but also those that strike at the root of farm life and its affairs—something that will appeal to real farmers and that will serve actually to educate their boys for the business of farming—soil physics, soil fertility, laboratory fields in crop production, the use of farm machinery, and the classification and principles of feeding of live stock.

As I see it, every high school that has a natural agricultural constituency of any considerable importance should put in a department of agriculture on the same basis as its department of chemistry, and proceed to offer at least one year, and better four years, of technical agriculture taught from the standpoint of the farm, that is, for the purpose of making farmers, to be accompanied by such collateral instruction in the arts and sciences as shall provide a suitable course for such of its pupils as find their interests in the country and on the farm.

The other point on which I would be particular is this: I am not arguing that the high schools in their present condition are doing, or are able to do, what is needed for agriculture. My contention is that they can get ready to do it, and that right speedily; and that if they will proceed to get ready they should have the chance, for it is their opportunity and their privilege; and if they do not propose to serve agriculture and her people as faithfully and as well as they are serving or intend to serve other interests, then they should be compelled to do it. That is my thesis in a few words; but my conviction is that they are for the most part fully ready to direct both their scholarship and their tremendous efficiency toward our problem if we will let them, and show them how.¹

I can best illustrate my thought in this connection by an outline of four years' work in agriculture designed to occupy one fourth of the time of a high school student preparing for the farm. This course is not assumed to be ideal, but it is known to be teachable to students of high school age because most of it has been so taught, and while special cases will require emendations, additions, or substitutions, it is confidently believed that this outline may be accepted as a safe basis for the present tentative efforts. Indeed, I am convinced that it will require less radical change than has been found necessary in college courses everywhere.

The following outline is intended to provide one of the four subjects which the high school student is supposed to take; that is to constitute one fourth of the work of such high school students as expect to live upon the farm: —

¹ Extract from an address on *The Next Step in Agricultural Education*, read at the University of Missouri, January 9, 1909.

Outline of Four Years' Work in High School Agriculture***FIRST YEAR***

Farm Crops, One Half Year, alternating with Soil Physics, One Half Year

FARM CROPS***Corn***

Description of at least six varieties.
Corn judging by score card.
Testing seed corn for germination.
Testing of varieties for yield on experimental plots. Repeat if possible on neighboring farms.
Methods of cultivation.
Plant foods necessary for crop production (10 elements); special needs of corn.
Place in the rotation.
Botanical relations of Indian corn.

Oats

Methods of cultivation.
Place in the rotation.
Treating oats for smut.

Wheat

(To alternate with corn and oats)

Description of at least six varieties — red or white.
Judging market grades of wheat.
Testing of varieties for yield on experimental plots or on neighboring farms or both.
Methods of cultivation.
Experiments on effect of size of seed.
Place in the rotation.
Harvesting and marketing — shrinkage.
Botanical relations of wheat.

Legumes

Identification and description of alfalfa, red clover, white clover, alsike, cowpeas, soy beans, and vetch.
 Uses and comparative value of each.
 Botanical relations of clover and the other legumes.

Grasses

Identification and description of timothy, blue grass, orchard grass, and any other three true grasses.
 Botanical relations of the cultivated grasses.

Tubers

Potatoes — effect of large and small tubers upon yield; effect of seed from prolific hill; treating for scab.
 Sweet potatoes — culture, yield, and uses as compared with Irish potatoes.
 Botanical characters and relations of each.

Weeds

Identification of ten of the most troublesome weeds by stem and leaf.
 Identification by seeds.
 Make collection of seeds of each. Put in small bottles or packages and label accurately.
 Habits of growth and methods of eradication.

Literature

The Cereals in America. Hunt.
 The Book of Corn. Myrick.
 Chemistry of Plant and Animal Life. Snyder.
 Grasses and Clovers, Field Roots, Forage and Fodder Plants. Shaw.
 Germ Life in the Soil. Conn.
 The Potato. Fraser.
 Farmers' Bulletins, Nos. 35, 91, 129, 132, 199, 214, 215, 229, and 249.
 U. S. Dept. of Agr., Washington, D.C.

SOIL PHYSICS (Winter laboratory work)

Physical composition of the soil.
 Formation of soils.
 How soils differ in texture and how they are classified.
 Moisture relation of soils.

Experiments in the laboratory and on plots to determine the water-holding power of different soils.
Experiments to demonstrate the capillary movements of water in different soils under different conditions.
Experiments to show the possibility of conserving soil moisture, and different methods of accomplishing the object.
Physical effects of humus in the soil.
Meaning and methods of tilling the soil.
Soil temperature affected by color and drainage.
Physical improvement of clay soils by the use of lime.

Literature

Secondary School Agriculture. Barto.
Rock, Rock-Weathering, and Soils. Merrill.
Physics of Agriculture. King.
The Soil. King.
Physical Properties of Soil. Warington.
The Soil. A. D. Hall.
Rocks and Soils. Stockbridge.
Cyclopedia of American Agriculture, Vol. 1, pp. 320-521.

SECOND YEAR

Horticulture and Gardening, alternating with Farm Mechanics

HORTICULTURE

Pruning of common fruit, shade, and ornamental trees of different ages.
Grafting apple, peach, pear, potato, and tomato.
Budding common fruits.
How fruits fertilize, with some practice in identifying the staminate and the pistillate parts.
The proper way to plant a tree and its subsequent care.
Identification of twenty to forty trees and shrubs used for planting or ornamental purposes.
The most troublesome insect and fungus enemies of fruit and ornamental trees and their destruction by spraying and otherwise.
Special work in making, and in the application of spraying mixtures.
Plant propagation, illustrated in the school garden by at least six of the most common vegetables and an equal number of varieties of flowers.
Cold frames and hotbeds; their preparation and use.

Literature

The Pruning-Book. Bailey.
 The Principles of Fruit-Growing. Bailey.
 The Nursery-Book. Bailey.
 Garden-Making. Bailey.

FARM MECHANICS AND THE HOMESTEAD

Cement construction — walks, tanks, small bridges ; reënforcement.
 Silo construction.
 Leveling for drains.
 Location of tile and sewer drains.
 Construction of both drains and sewers.
 The germ nature of infectious diseases.
 Methods of dissemination of infectious diseases.
 Disinfection.
 Sanitary draining and sewage.
 Farm sanitation.
 Source and supply of pure water.

Literature

Farm Drainage. Elliot.
 Irrigation and Drainage. King.
 Sanitation of the Country House. Bashore.
 Water and Public Health. Fuertes.
 The Chemistry of Life and Health. Kimmus.
 Bacteria in Relation to Country Life. Parts II and III. Lipman.
 Proper Disposal of Sewage Wastes in Rural Districts. (Nelson, Bull.
 166. New Jersey Agr. Exp. Sta.)
 Sewage Disposal on the Farm and Protection of Drinking Water.
 (T. Smith, Farmers' Bull. 43.)
 Cyclopedia of Am. Agr., Vol. I, pp. 231-307.

THIRD YEAR

Animal Studies, alternating with Soil Fertility

ANIMAL STUDIES

Composition of milk.
 Use of Babcock test ; testing of individual cows.

Keeping quality of milk by different methods of sanitary preparation —
fore milk, middle milk, last milk : open dish, closed bottle.

Studies of feeding practices of the neighborhood.

Silage and its uses.

Comparative studies of yields per cow and per ton of feed.

Different cuts of meat ; their location in the carcass and value for food.

Breeds and characteristics of farm animals — to be carried through the
year. Text — Plumb.

Identification of breeds.

Judging live stock — market types.

Each pupil to prepare written detailed history of at least one breed of
domestic animal.

Raise, if possible, two or three breeds of chickens.

Studies of local live stock interests.

The elements of animal nutrition, — protein, carbohydrates, minerals, —
feeding standards and balanced rations.

The common ailments of farm animals : symptoms and methods of pre-
vention or treatment.

Literature

Milk and its Uses. Wing.

Feeds and Feeding. Henry.

Breeds and Characteristics of Domestic Animals. Plumb.

Breeders' Gazette.

Hoard's Dairyman.

SOIL FERTILITY

Pot experiments in growth of plants with the different elements of
fertility withheld.

Duplicate on field plots with certain elements increased.

Critical comparison of crops grown on fields of different degrees of
fertility, considering both yield and the character of the crop.

Study of the comparative yields of the neighborhood.

Root tubercles and inoculation.

Sources of nitrogen, of phosphorus, of potassium.

Farmyard manure as a source of fertility.

Commercial fertilizers as sources of fertility.

Practical methods of maintaining fertility.

Testing soils for acid conditions.

Practical rotations.

Literature

Secondary School Agriculture. Barto.
 Soil Fertility and Permanent Agriculture. Hopkins. (In preparation ;
 in the meantime use Bull. 123, Ill. Exp. Sta.)
 How Crops Feed. Johnson.
 Fertilizers. Voorhees.
 The Fertility of the Land. Roberts.
 Soils. E. W. Hilgard.
 Illinois Bulletin No. 76, Alfalfa on Illinois Soil.

FOURTH YEAR

Improvement of Animals and Plants, alternating with the Farmstead

IMPROVEMENT OF ANIMALS AND PLANTS

Origin of domesticated races.
 Natural selection.
 Improvement by selection.
 Heredity.
 Practice in breeding.
 How to cross ; cross pop corn, sweet corn, field corn — naturally and
 artificially ; inbreed field corn, sweet corn, and pop corn ; plant the
 mixed kernels. Note the character of crop. Detassel and com-
 pare the yield of the detasseled with the entire rows ; select for
 length of ear ; select for greatest yield ; select for height of ear on
 stalk ; select for widest leaf ; select for number of rows ; select for
 any striking feature, as for corn on the tassel. Plant corn found
 growing upon the tassel ; establish separate strains of clover and
 timothy ; hunt for divided head of timothy — plant it. Make a collec-
 tion of freaks in plant growth. Experiment in transmission of color
 in sweet peas. Experiment with small animals, and, if possible,
 establish a poultry plant in connection with the school ; select for
 maximum in egg production and for plumage coloration.

Literature

Improvement of Animals and Plants. Davenport. (In press.)
 Origin of Species. Darwin.

THE FARMSTEAD

Suitable exteriors for farm buildings, especially dwelling houses.

Comparative studies in designs for farm buildings.

Equipment of houses and barns with heat, light, motor power, water pressure, ventilating and cleaning devices, and other machinery.

Design of farmstead grounds and their suitable planting.

Literature

Country Life in America.

Farm Dwellings. Wing.

The Farmstead. Roberts.

Is it objected that such a course of academic procedure is certain to exclude other studies that are indispensable? To such objection I answer as follows:—

1. No instruction is more indispensable than that which enables the individual to be self-sustaining and to contribute his share to the world's work that must be done if man as a whole is to progress or even to exist.

2. There is no law but custom to dictate that a high school course is to be exactly four years long, and if such a procedure as is herein advocated should lengthen the school period to five years, it would be to the advantage both of secondary and of higher education.

3. Something can be done both by condensation and elimination as well as by better methods of study and of teaching to reduce the time limit without impoverishing the course.

4. If the student is getting something day by day which, to his senses, is evidently going to help him to succeed as he sees success, then he will not only remain longer in the school, but he will pursue his other studies with greater willingness and better results, all of which tends to higher scholarship within the school as well as to greater efficiency afterward.

5. At best but a small fraction graduate from any course, hence this plan will provide the student day by day with a balanced programme as between the vocational and the non-vocational, and the preservation of this balance is of vastly more consequence than is the total length of the course or the mere element of graduation.

The call for teachers fitted to conduct this new work in high schools is so sharp the present year as to take at generous salaries every available candidate, with many schools unsupplied. This insufficiency of teachers shows not only the interest in the subject but the suddenness with which the demand has arisen; indeed, anything like a demand is less than two years old.

Wherever this kind of teaching has been tried it succeeds, and quite to the surprise of the skeptical, the students who take agriculture accomplish not less but more of other work, and do it better than before. It seems that the introduction of this professional study has added a new and a live purpose to education as the student sees it, and when taught in connection with academic work it seems to broaden instead of to narrow the student.

Minnesota has just enacted a law by which any high school which will add a department of agriculture that meets the approval of the State Board of Education may draw upon the state funds to the amount of twenty-five hundred dollars annually, the number of schools being limited to ten additional for each year. Over sixty made the first application, many of which are going on with their plans independent of state aid. To this great state belongs the credit of taking the first right step in the direction of secondary education in agriculture in thus giving state indorsement and aid to what is rapidly becoming a general movement among the best high schools, especially in the distinctively agricultural regions.

CHAPTER VIII

AGRICULTURE IN THE ELEMENTARY SCHOOL

"As the twig is bent the tree is inclined."

SOMETHING of agriculture can certainly be taught in the grades, and especially in such of the ungraded country schools as have not yet felt the blighting effect of better schools in the near vicinity. Just what this will be is yet to be worked out. It must be borne in mind that about all the real experience we have had in teaching agriculture is in colleges and for the specific purpose of training farmers. Manifestly this experience can be transferred almost bodily to the high school, which also fits for life, so that the problem of introducing agriculture in these schools is largely one of selection of material and its proper correlation with the non-technical.

The introduction of agriculture into the grades, however, is another matter. It is not simpler, but vastly more difficult, partly because the technical significance of the subject is less and its pedagogical significance is more, and partly because the teacher is and must be less of a specialist.

No thinking man, however, can avoid the conviction that technical instruction should begin in the grades and the child not to be permitted to reach the high school age without its attention having been sharply directed to the way in which the family life is sustained. This is partly because habits of industry and thrift are necessary and need to be

instilled early to be effective, and partly because the great mass of children never continue beyond the grades.

The unpardonable sin of the parent or the teacher is to urge the child to "get an education so he won't have to work." Unfortunately neither parents nor teachers can claim immunity at this point, and when this economic, social, and moral offense is committed, it is directed alike against the little one and the generation of which he is so soon to form an integral part. He is to get an education that his work may be more effective and his life as a whole more successful; and as life in general is founded upon industry, so should the industrial side of his education begin early and proceed as a parallel to the end, or, at least, until intelligently abandoned for a non-industrial profession. It may be remarked parenthetically that the public is not interested in those forms of education that end in nothing and that express themselves in no form of human activity, using the term activity in its broadest sense.

Our first attempts at universal education resulted, not advantageously, but disastrously, to many of our most useful and necessary occupations. Children of farmers and mechanics flocked to school, but the course of study was adapted to the so-called learned professions. It was not only silent about the great industries of life, but the influence exerted upon the young was to fire them with an ambition to "rise in the world," whatever that may be. The meaning given the term, however, by repeated if not almost daily injunction of teacher and text alike was to "get an education that you may not be obliged to labor."

This was universal education only in the sense that everybody was admitted to the schools: it was not universal education in the sense that a true picture was afforded of the many activities of a highly civilized state. It was

not universal in the sense that the necessary occupation of some ninety per cent of all the people was fairly treated. The courses of study not only failed to provide anything directly professional in farming, mechanics, and the useful arts and industries generally, but the incidental influence was to crowd the hundred per cent into the occupations of the ten per cent.

So the mechanic's boy that went much to school seldom or never returned to the shop, and out of the many who went out to seek their fortune, a few, of course, succeeded and served as examples to fire other hundreds to "escape from a life of toil."

In the same way the farm boy who had much contact with the schools seldom returned to the farm, but hied him to the city, where he was welcome for his habits of thrifty industry, whether he ever rose or whether he ground his life out in a cheap clerkship. This stripping of the land and the country of its brightest and best, its most ambitious and promising young went on until a general state of public alarm ensued as to the consequences of such a system of one-sided education when applied to all the people, for the evident effect was to strip the useful industries and occupations of the choicest young men and pile them up in a few favored callings where many of them were not needed nor wanted.

This was not the worst result, either, because this effect of education upon the industries themselves was not helpful but disastrous, whereas we have a right to assume that if all men are to be educated, then all occupations will be elevated and developed and improved as only educated and able men can improve a profession. Hence the revolution against the first effects of universal education; hence the crusade for agricultural education; hence the demand for

industrial courses, hoping that the young may thereby be really fitted to live the lives that most normal men must live, and that useful occupations may be profited and not damaged by the operations of a system of universal education.

Accordingly we must begin industrial education as early as possible, and agriculture is no exception. I do not claim that it is easy: I only say that it must be done. I do not claim that it is as easy as to teach the same subjects and the same ideals to older pupils in the high schools and colleges: I only say that the way must be found, the matter selected, and the method worked out. I propose no definite details at this point, but await the results of the many trials that are now being made in this new and most difficult field of education, confidently believing that in the very near future we shall have as definite knowledge as to matter and methods here as we now possess in the realm of the college and the high school. Like all new movements this will proceed from above downward, and as experience in the teaching of agriculture in the colleges has paved the way for the high school, so will its teaching there and in the normal schools assist progress in the grades.

Fortunately for this particular subject it is closely related to that recently recognized pedagogical necessity, nature study, only it is nature study of a peculiarly valuable sort.

"Agriculture, even in the grades, is something more than ordinary nature study. It is nature study plus utility. It is nature study with an economic significance. It is nature study which articulates with the affairs of real men in real life. It is nature study in which the child may influence the processes. It is nature study which distinctly stimulates industry."¹

¹Quoted from a paper by the author on the Relation of Nature Study and Agriculture in Elementary Rural Schools, Meeting of the American Nature Study Society, Baltimore, December 29, 1908.

When the pupil is sent to study the tree, the bird, or the insect, the most that he can do is to observe and record. This is all good in its way, but the tree, the bird, and the insect are self-sufficient unto themselves, or, at least, are in no sense dependent upon the boy, nor are they of much consequence to him or his except in an æsthetic sense.

When, however, the boy is set to studying the pig, the matter of utility at once enters in as a factor of the problem. The pig is worth something and the boy can see it. He can see how the bare existence of the pig is dependent upon regular feeding which he himself may give; and how the pig, when he is brought to a finish, is capable of contributing not only to the support of the body, but can be sold for money with which the boy may possess himself of anything dear to his heart. He sees, in other words, how he himself may influence the production of pigs, and if he has even a fair share of that creative activity which most boys possess, it will be stimulated into action by the prospect.

If he is set to studying the cow and her milk, especially if he learns how to compare one kind of milk with another, or if his attention is even directed to the conditions under which different kinds may be produced, he sees in concrete ways how Nature behaves in her workshop, what it is that Nature is doing, day by day, and how it is that these activities are connected with the affairs of men. He cannot help seeing how the family that owns good cows has an advantage in the world over those whose cows are poor or ill-fed.

If he is set to studying corn, he knows at once that he is dealing with a crop whose management is in the hands of man; with something that does not exist for itself alone and that would not and could not exist except for man's at-

tention. All this helps to stimulate activity and productive energy on the part of the child, which is one of the things we need to nourish when we take children out of real life for a considerable length of time and put them into that artificial world we call the schoolroom.

So we might review the whole gamut of topics agricultural and show how their study stimulates and satisfies something more than curiosity or even observation and record; how they reach out and take hold of the very life of the boy, and how they connect the affairs of the school and the schoolroom with those of the home, the neighborhood, and the world into which the child is already anxious to plunge and make himself known and felt.

One of our problems in education is how to give information to the young and how to teach methods of acquiring more without destroying creative instinct; how to compensate in the school for some of the damage we have done in taking the child out of real life during the educative process. Now nature study in itself is good for this purpose. It is more than that; it is excellent. It stimulates a love for the material that is around us. It stimulates observation of what is going on, and it gives practice in making accurate records of what is seen; but if nature study can extend into the realm of the useful, into the region of the productive, into the world where human relations are involved, then so much the better.

This is the possibility of agriculture as a subject for study in the grades. The large question is the teacher. To what extent can the grade teacher know the field well enough to use it to advantage for these purposes? The only answer is that all too often the teacher is unable to make proper use of this mass of the best material in the world for teaching processes and that lies close at hand.

It is the old story over again of looking afar off for the things that after all are close by; but in this, as in many other things, even though the ideal cannot be attained, an honest attempt is well worth while, and if the teachers can be induced to combine, along with observation and record, the elements of usefulness and the human relation, then it will be well worth all it costs to stimulate as much as possible the teaching of agriculture in the grades of the public schools.

Moreover, as this subject makes its way into the high schools and the normal schools the time will not be long before teachers will be developed with the training and the material to go out into the world of the children and hold up to them a fairly true picture of the world in its industrial activities.

As I see it, the objects of teaching in the grades and especially in the country school that superior quality of nature study which we may call agriculture may be briefly outlined as follows:—

1. To educate partly by means of that industry lying nearest at hand, to the end that the student may be *active rather than passive* — a doer as well as a thinker.
2. To widen the perspective and so far as possible to introduce the student to the real life of the world.
3. To instill a respect for industry in general.
4. To give some agriculture for its own sake as well as for its educational value in order that its fundamental need shall be appreciated and its practices improved.

Not all of agriculture is available for this work, hence only those portions that lend themselves to the purposes of the school should be used to this end. Just what these portions shall be and precisely how they shall be handled remains to be determined, but the solution of the problem

is nearing and its general character is commencing to appear in outline.

Whatever may be done, however, in the way of teaching agriculture in the grades, the ultimate solution of the country school problem lies not in the old-fashioned, ungraded district school, but in the modern method of consolidation whereby a half-dozen or more weak single-room and single-teacher schools are combined into one school with several teachers — an effective organization for doing well-defined high school as well as grade work. I am not unaware of the substantial advantages of the old-time country school or its present utility where it still lingers with its old-time vigor; but it is an institution of the past; an outgrowth of conditions that are passing never to return; moreover, its decay is hastened rather than retarded by the rapid movements of life in the near neighborhood, and the solution of the country school problem involves the extension of the modern high school until it includes the country as well as the city and the town.

In no other way can the country child as such be insured as good educational opportunities as his city cousin, but with a school sufficiently large to be strong and with good courses of agriculture in the rural and village high schools, the people of the country will enjoy educational privileges second to those of no other class, for in many respects they enjoy a natural and initial advantage in more and better sleep, in better air and more of it, and in a life that is richer in experience day by day.

CHAPTER IX

AGRICULTURE IN THE NORMAL SCHOOLS

THE sudden call for teachers of agriculture outside of agricultural colleges is by no means limited to high schools and the elementary country schools. The call is sharp from the normal schools of the Middle West which have this year taken some of the best trained and most promising of teachers of this class.

This problem in the normal schools is still different from that in any other field of agricultural education. It resembles that of the high school and college in that the school is large and strong, the pupils fairly mature, and the teachers skilled. It differs in the fact that the students are not prospective farmers, so that the technical character of the work is at least one remove farther from its final object. Not only is all this true, but the students of the normal school, when they in turn become teachers, will mostly be called upon to adapt the subject to the grades.

On the side of both matter and method, therefore, the problem in the normal school possesses all the difficulties of the problem in the grades, with the added handicap that it is always more difficult to teach teachers than to teach students.

Nevertheless, because it is early in the field and because of its interest, there is every prospect that the normal school will be one of the early agencies in the solution of the problem of secondary education in agriculture, as it will

doubtless be the principal agency in the solution of the difficult problem of teaching this subject in the grades.

The incidental effect of this effort upon the spirit and purpose of the normal school as a whole is certain to be decidedly advantageous. Agriculture is a form of real life that is readily seen and its public significance is easily appreciated. Again, nowhere else will the school garden be likely to reach so perfect a stage of development as in the normal school, where the maturity of the student will insure exceptional results.

Here, however, as in the work of the grades, much original work remains to be done. While the means are not yet clearly defined and while matter and method are still under experimentation, the end is clear — to train teachers in the art of inducting the child by easy and natural stages from his own little realm into the world of the present and the past, and to do it all without losing touch with his own personal environment at any point to the end that the educational process shall terminate in service and not in shiftlessness.

It is more than likely that the introduction of agriculture into the normal schools will in the end exert a profound influence upon the teaching of general science. There is no manner of doubt that the masses of people are best benefited by the teaching of science in its applied form. The normal schools, however, like the high schools are dependent upon college graduates for teachers of science. In the colleges the sciences are largely taught in the abstract, each science from its own standpoint and with a view not so much of its application to the everyday affairs of man as to the further extension of knowledge in its own realm. The teacher of course, especially when young and inexperienced, instinctively repeats what was taught

to him, and thus is transferred to the secondary school both the matter and the point of view of the college classroom, whereas the subject should doubtless undergo much transformation before being presented to the younger pupils of the secondary school.

Without a doubt as the sciences come to be better developed by the more complete exploration of their limits and as their mutual interrelations become better established, the time will come when the application of these sciences to human affairs will be more generally prominent in the mind of the experimenter and the teacher alike. With this will come an accumulation of a teachable body of this class of knowledge, and under these conditions applied science will come to occupy much of the time and attention now devoted to the abstract — all of which will be vastly to the profit of the people and, in the end, to the practical extension of science.

Agriculture is evidently to be a pioneer in this business of the adaptation of science to the common affairs of life in the schools that are attended by the masses, and if this be true, its incidental service may be even larger than its direct. In the meantime it is vastly significant that the schools where teachers are made have at last commenced seriously to study real life in one of its most concrete forms.

CHAPTER X

THE DEVELOPMENT OF AMERICAN AGRICULTURE — WHAT IT IS AND WHAT IT MEANS¹

The energy of the soil is the life of the people.

AGRICULTURE is a remarkable occupation for a number of significant reasons : —

1. It engages the time and attention of nearly half our people and it will always absorb the lives and energies of a very large proportion of the race.

2. This is the only considerable calling in which the home is situated in close connection and in intimate contact with the heart of the business so that all members of the family, men, women, and children alike, live in the atmosphere of the occupation and each finds some useful part to perform as a contribution to the general effort; that is, agriculture is not only an occupation but a mode of life as well, and whatever touches and uplifts the one is bound to react powerfully upon the other.

3. The conditions of country life are peculiar in their contribution to health, their stimulus to personal initiative, and their fostering influence upon that spirit of individualism upon which rest our free institutions and our democratic government. The country is a good place in which to be born.

¹ This chapter is added to call attention to the significance and the possibilities of American agriculture. It follows clearly the line of thought of an address delivered by the writer at the University of Maine upon the occasion of the dedication of Agricultural Hall, February 24, 1909.

4. The business of farming, dealing as it does at every step with the subtlest laws of nature, is capable of infinite improvement and of indefinite development as soon and as rapidly as the findings of science are applied to its affairs.

5. The occupation is, and from the nature of the case must always remain permanent, because all men forever must subscribe to the decree of nature and eat, for food is the fuel that feeds the human engine, and in the last analysis our future development as a race will be conditioned upon our success in providing an assured and independent food supply, abundant and suitable for a highly developed and always advancing civilization.

6. There is, therefore, a public as well as a private side to agricultural development; and it is because of this public and exceptional interest in this particular occupation that we have established and maintained at public expense in every state of the Union institutions whose business it is not only to instruct in the most advanced methods of agricultural practice, but also to conduct research through experiments by the most approved methods with a view of adding to our knowledge of the scientific facts and principles upon which further development of agriculture and of country life may be established.

It is exceedingly important that the aims and purposes of this modern educational movement be clearly understood and especially that they be not misunderstood.

First of all the purpose of agricultural education and research is not to benefit the farmer as an individual or even farmers as a favored class. The principal aim of other forms of education in the past was to benefit their devotees personally without much regard to the consequences, either public or private. Not so with this form of education. Its primary purpose is the development of agriculture from the

public standpoint as a productive occupation and incidentally and necessarily of the people who live by farming. In other words, its first objective is the distinctly public one of producing food, and all other considerations are secondary and subsidiary.

Now the public is not interested in the question whether John Smith succeeds or fails at farming: indeed, it does not care whether he farms at all or what he does or does not do so long as he does not become a public charge and so long as he continues to contribute some share to the public good.

But the public is interested that somebody should succeed in farming. More than that, it is interested that enough people should succeed and that they should succeed well enough to operate the land to the best advantage and provide an assured and sufficient food supply. Now the lands cannot be operated to the best advantage by an ignorant peasantry. Only men of good parts and educated in the principles involved can handle these lands in such a way as to secure a maximum of human and animal food at the least expense and at the same time preserve their producing power against future needs.

The aims and purposes of agricultural education and research are, therefore, primarily the promotion of public safety in the matter of a racial food supply, to which matter the education and information of individuals is an essential but subsidiary incident; which incident, however, is certain to result in producing a country population of a superior type, all of which also reacts powerfully upon the public good in matters both social and political.

In the last analysis and reduced to the lowest terms, the fundamental purpose of agricultural education and research is the development of agriculture as a productive

occupation and of the agricultural people as a numerous and important part of the social and political fabric.

Development is, therefore, the central thought in educational activity along agricultural lines to-day and the development of American agriculture to its highest attainable estate both as a business and as a mode of life is the high purpose for which the agricultural colleges and experiment stations were founded and are supported by a far-seeing and liberal-minded public. It is profitable and in every way highly important that we all pause a moment from time to time to gain the clearest and most comprehensive understanding possible of all that is involved in so important a matter. Accordingly, that we may all alike be intelligent and work together to a common end, I invite your attention somewhat carefully to the details of this development which may be briefly outlined under six fairly definite propositions as follows :—

1. *An Agriculture Profitable.* The first step in the development of any business is to “make it pay.” Whatever we may say about the glories of country life, and it is much ; whatever the songs we sing of the free air, the twittering birds and the blessed sunshine, and they are many ; after all and before all, farming is a business, and the first and the fundamental step in its development is to put it on a paying basis. Our colleges and our experiment stations have done well, therefore, to devote their first, and up to this time their principal efforts to the labor of increasing the profits of farming. In the past, farming was not a capitalized industry and such a thing as failure was almost impossible. From now on, however, farming is to be a capitalized occupation and failure will be relatively easy ; for the new discoveries of science, while they tend to establish the business on a sounder basis, do not make it easier.

in the sense of better adapting it to the novice or to men of low capacity. Agriculture is rapidly becoming more difficult, calling not for less but for more, of brains, of knowledge, and of executive ability, and as such it is rapidly challenging the attention of the brightest men, who will be attracted into the calling about in proportion as they can feel the possibility of reasonable profits.

No business can hold the respect and the service of men of ability unless it affords them a reasonable reward for what they put into it, and certainly no occupation can commend itself to ambitious young men until it offers promise of a good and reliable income.

In this connection it is most significant to note the increased respect for agriculture and the new interest in farming and in country life that commenced to spring up among all classes almost immediately after the work of the college and experiment station began to show how to put this business on a scientific and paying basis, and it is significant, too, that we now hear less and see less of the drift from the farm to the town, and that men of sound business sense and wide experience are beginning to look to the land and to agriculture not only as a safe business but in every way as a desirable occupation. This is the main influence that will regulate the flow from the country to the town and hold in check that insane rush of young men cityward that we have all deplored for these many years.

2. *An Agriculture Productive.* It is not enough that agriculture should be profitable. In its development it must also become in the very near future enormously productive. How pressing this point will shortly become few people are able to realize, so abundantly have the virgin soils of this country produced in the past, so boundless have been their extent, and so small has our population

been almost up to the present day. A little careful consideration, however, will speedily show that conditions in this respect are to undergo a fundamental change in the very near future indeed.

Under good conditions, the human animal can double his numbers every twenty-five years. By the aid of immigration and despite the ravages of four wars, we have maintained this rate of increase in this country since the Revolution, and the population of the United States doubled four times in the last hundred years. If we maintain this rate of increase for another century—and something is wrong if we do not—if we maintain this rate of increase, we should have in this country a hundred years from now no less than twelve hundred millions of people, a hundred millions of whom should live in Illinois. Under these conditions not less than thirty millions should live in the state of Maine,—that is, the population of the entire United States at the time of the Civil War would then be crowded into a single one of our smaller states, and that within the present century.

For various reasons this ratio of increase cannot much longer be maintained, yet it is the natural rate, and it tends to show us what would come about under normal conditions within a century,—and what is a century in the life history of a people?

Believe me, race suicide if it comes will be due not to a failure of the birth rate: it will be from our sheer neglect to maintain conditions that will insure food for the people. This is the form of race suicide against which we need most to protect ourselves, and it is none too soon to begin. The world has not yet learned how to feed such a population as is just ahead and before the present century is ended the largest single public issue will be that of bread.

Within the lifetime of children born to-day, scarcity of labor will be a matter of history, and abundance of cheap food will be a tale that is told by the grand'ther in his chimney corner dozing in his dotage. We are educating in our schools to-day a generation of children to live a life that we ourselves have never seen and that history does not record, and we do well if we soberly calculate what their conditions of life are likely to be and mend our methods accordingly.

We were three hundred years in getting a population of five millions of people, so slowly do numbers pile up when the base is small, whatever the ratio, but we have increased ninety millions in the last hundred years. With such a base and with modern conditions of life, this country can and will produce men at a rate the world has never seen. We can now produce in this country as much increased population in the next twenty-five years as we produced in the whole four hundred years since its discovery by white men, and we can produce twice as many more in the next twenty-five. In fifty years from now we shall have the population of China in this country, unless something goes wrong, and it is the business of agriculture to learn how to feed them, and feed them well. When it has learned this, it will have learned many a lesson the colleges do not now know how to teach.

We have thought but little on these things because all of our experience has been with an insufficient population and we have even courted immigration as a source of labor. Had you thought of it? with our present population matured we can in ten years duplicate every emigrant dead or alive that ever touched this country. We have never yet been conscious of our population as far as adults are concerned, because we have had room and food and labor in superabundance. But we have never had to deal with such numbers

as are just ahead, the whisperings of whose coming may be found in the housing and the teaching of our now enormous child population. When Chicago calls for eight million dollars' worth of additional public school buildings in the next two years, you hear from a tide of young humanity whose numbers and reproducing powers will make new problems for our race and for its agriculture to solve. Not the least of these will relate to the power of the land to produce food for man and the animals he has domesticated.

Aye! for the animals — there is another rub. We revel now in the luxury of animal life. Every family, on the average, has a horse, four head of cattle, four sheep, and four pigs, with some few millions to spare. They literally work and eat and root for us, and we consume their bodies and their body products with a prodigality that no dense population has ever yet found possible. Now animal service is an expensive luxury when food becomes costly. Animal food is approximately ten times as expensive as vegetable; that is to say, it takes ten pounds of grain to make a pound of flesh, which is no more valuable for supporting life than is any one of the ten pounds of grain that went to make it.

Our descendants will face the day when they must surrender some of this animal life as surely as they face the day of their birth, and when we consider the fact that economic nitrogen production involves leguminous plants that are fit only for animal food, we will begin to see how complicated is the problem of developing an agriculture sufficiently productive to meet coming requirements without distress.

3. *An Agriculture Permanent.* The conditions that have just been discussed will not be temporary and transient: they will be enduring, yes, permanent, and they must be met by a permanent agriculture — a thing the world has never yet succeeded in establishing. No race

has ever yet learned to feed itself except at the expense of the fertility of their own or of some other country. Other races have had to meet this problem and have gone down under it.

Where is Carthage to-day? Where is Egypt, whose civilization once flourished upon fertility brought down from the highlands of a great interior? What of Palestine, that once flowed with milk and honey and blossomed as the rose, but now supports only a miserable and straggling population of wandering Arabs? What of Babylon, amid whose "heaps" the jackal snarls where once kings held revelry and where civilization was born in the richest river valley in all the earth? What of India, where struggling millions maintain their racial existence at the cost of periodic and decimating famine relieved from other regions that have not yet met the "Great Issue"? What of China? With a population of four hundred to the square mile, it must presently either move, adopt new methods, or starve. It is pointed out as a people who have solved in some uncanny way the problem of a permanent agriculture and a permanent food supply, yet good authority says that on the highlands are regions once peopled and now abandoned, where for stretches of ten miles *no man lives*.

What of England? She is a new country, yet she long ago faced failing fertility and built fleets of ships to carry guano from the South Sea Islands, exhausting within the recollection of men now living those natural beds which the seabirds had been ages in producing. Not only that, she has brought mummies from Egypt to fertilize English soil that the Englishman might have his beef, though already bread riots wage from time to time in London. So narrow is the margin on which English agriculture is maintained that good judges say that the law of primogeni-

ture is the only condition that makes beef production still possible in England.

Our Federal Government announces the newly discovered theory that lands do not wear out, but the fact remains that large sections of Old Virginia are so worn as to be abandoned, and families that once entertained presidents and foreign diplomats, now that the wheat yield has dropped to ten or twenty per cent of its former magnitude, eke out the income by keeping summer boarders.

Every intelligent man knows that the old cotton and tobacco lands of the South are badly worn and have lost forever their power of spontaneous production. That great grain-growing region in southern Illinois, known locally as "Egypt," covers an area large enough to make ten such states as Rhode Island, but much of it was sufficiently exhausted, so far as profitable agriculture is concerned, by two generations of grain farming, that some of the land became in local parlance "too poor to raise a disturbance." It is fortunately being rapidly restored by methods devised by the Experiment Station, but the saddest fact is that the effects of soil impoverishment had in some cases gone so far as to affect the people, and they were unable to raise even the small initial cost of restoration, in which case, of course, the problem must go over to men of capital who had sojourned on more fortunate lands.

Not only does all this have a bearing upon the problem of a permanent agriculture, but added to this is the fact that our "boundless prairies" with their "inexhaustible fertility" are found upon examination to be surprisingly short in phosphorus.

If we lack nitrogen, we know now how to get it from the inexhaustible supplies of the air by the use of leguminous crops. If we lack potassium, the natural deposits are ap-

parently unlimited, but when we lack phosphorus we are in need of a commodity which exists in usable form in but exceedingly limited areas on the earth and yet which is absolutely essential to the production of food.

Considering all this — considering, too, the fact that at the present rate of consumption all the American deposits of high-grade phosphate rock will be exhausted before the end of the present century, and considering our own overwhelmingly increased need for food in the very near future, I am constrained to say that in the interest of self-protection and the founding of a permanent system of American agriculture, the annual exportation of a million tons of phosphate rock to Germany *ought to be stopped*, by constitutional amendment if necessary.

No man can study for a moment the entirely new conditions and problems that will confront our people in the immediate future without realizing that the establishment of agricultural colleges and experiment stations was the largest act of foresighted wisdom in recorded history, nor can he fail to realize that their adequate maintenance and fostering support is not only the first duty but one of the highest public privileges of the commonwealth of our day and time.

There is to be, in the near future, a struggle for land and the food it will produce, such as the world has never yet beheld. He who knows where and how to look can see it coming. The African activity among western European nations is a part of it. It is always cheaper to move than to stay when over-population and failing fertility threaten a shortage of food — provided there is any place to move into; that is, provided we can dispossess the other party and his land is worth the contest.

However that may be as an abstract proposition, for us

there is no more moving. For us there are no more "new worlds." For us there is little more "Out West." Our fortune and our future, whatever they may be, are staked down on the American continent. Literally "here we rest," and whether we like it or not, we must devise and establish a permanent agriculture here or go down in the attempt.¹

Our descendants will certainly be as cultured as we; they ought to be more so. Their needs surely will not be fewer or of a more modest character. Their numbers will be vastly greater, and unless *we*, not *they*, can succeed in founding a permanent agriculture, the race will degenerate and end where it commenced, in poverty and barbarism.

I have already pointed out that restorative and permanent systems must be established *before the people are in distress for the necessities of life*. It is *we* who must discover and establish this permanent system. There is no time to be lost, for we do not yet know how to do it and a stupendous population is just upon us. It is none too soon to attack with all the scientific vigor of all the Experiment Stations of all the states this problem which will shortly bear harder upon us than upon any contemporaneous race in the world except the Hindus and the Chinese, who have almost certainly delayed too long and lost their chance. European nations will be occupied for generations yet in exploiting Africa and perhaps South America, and we before any other modern nation must face the issue of a permanent agriculture in its own country.

We have no right to dodge this issue now while we are few and young and wealthy. It is our own descendants whose lives and happiness we literally hold in the hollow

¹ Since the above was written a fleet of steamers is announced as put in service to carry *Argentine beef to New York*.

of our hands, and he who shirks that responsibility is guilty of a crime against his race beside which ordinary treason is trivial; and when we are called, as we are, to the task of establishing if we can a permanent agriculture, it is a call of the race for a chance to live and work out its destiny.

So much for what may be called the business side of farming — an agriculture that is reasonably profitable, highly productive, and certainly permanent. What now on the human side? What is the development of the farmer as a man to match the development of his business as an occupation? And so I come to the next count in our series of development.

4. *The Country Comfortable.* Agriculture is not only a business, it is a mode of life as well, and if it is to be successful in the latter particular it must in the end afford its devotees the same comforts of life as are obtainable in other occupations. This has not hitherto been possible, but its early realization is becoming every day more promising, and if the colleges and stations perform their whole duty in this direction, and if they are supported by the people, as they ought to be supported, then one of the earliest and most distinctive developments of our agriculture will be in "creature comforts" on the farm.

This development will largely take the special form of modern conveniences, including labor-saving equipments in the farmhouse. The farmer has provided himself with all sorts of machinery and ingenious mechanical devices, not only to cheapen production, but to make labor easier for himself, his hired help, and even his animals. In the meantime his wife gets on with few improvements and with no real conveniences, living and scraping along as best she can against the day when the family shall build its home in town and "have the conveniences." By

modern conveniences are generally meant bath room and toilet facilities, a lighting system, and running water inside the house. That is about all, but it would take a book to recite what has been sacrificed in going to town to get these things.

For this the farmer has abandoned his business. He has broken up his children's home. He has exposed his little ones to the unbridled dangers of the small town. He has set before them the example of idleness. He has turned his back upon the farm that has made his wealth and stripped the land of its fertility to build in the town the home to which the farm was entitled. He has stripped the country of its earnings to build up the city and add to its numbers an essentially useless and undesirable population. So common has this thing become as to excite public alarm, and no one topic rings a more significant note through the findings of the Country Life Commission than the abandonment of the farm at the stage of house building.

The uselessness of all this under even *present* conditions was, I think, first called to public attention in an address by Mrs. Davenport at the Illinois Farmers' Institute at Peoria in February of last year. She had had an extensive experience on the farm and had lived a good number of years in town. With a natural mechanical instinct and some experience in building, she saw how thoroughly the conveniences and the labor of the house had been overlooked, relatively speaking, by both inventor and designer, except where conditions of life, as in the city, compelled some decent attention to sanitary measures, evolving the bath room, the toilet, and the slop sink. She saw how completely the labor of the house had been left to servants in the homes of the wealthy or endured by the wife unable to afford a servant, neither of which conditions was favorable

to the development of conveniences for performing the household labor. This comparative poverty in house equipment is also partly due to lack of attention on the part of inventors and activity of manufactures, all of which is traceable to another initial abomination—that ancient and dishonorable custom by which the husband carries the pocket-book and so often opens it only upon humiliating supplication for a share of what the wife on the farm has fairly earned.

Mrs. Davenport knew that conditions had commenced to mend themselves in certain particulars and were capable of still further improvement. Accordingly, she set out to learn how far and to what extent the farmhouse can now be equipped, not only with the so-called modern conveniences, but with still further devices for saving labor. The results of her study as given in the address already referred to may be briefly summarized as follows:—

The enterprise of the best farmers in equipping the farm with machinery has already reached the stage of the small gasoline engine for running the machinery of the barns, and especially for pumping water, generally into small or elevated tanks subject to freezing, an evolution from the old and unreliable windmill.

Beginning at this point with the gasoline engine, which stands as a kind of connecting link between the machinery of the farm and that of the house, it appears that this little engine, first of all, can pump water, both hard and soft, into the Kewanee or other automatic system and secure a pressure of 70 pounds per square inch in air-tight tanks standing in the basement or buried in the ground beyond the reach of frost. This is as good as the best city pressure, and is abundant to throw water over any of the buildings, carry it into both house and barn and near-by fields, and

put both hard and soft water, hot and cold, on all the floors of the house. It will also run a water motor — cost, six dollars — sufficiently powerful to operate the washing machine and do the principal part of the hardest job about any home—all for six dollars under pressure. This same engine can run a gasolene heated mangle with a capacity of a napkin a minute or a tablecloth every six minutes. It can also operate a storage battery electric light plant. Not only that, it can furnish the power for the churn and other small machinery; and last of all, it can operate a vacuum cleaner system whose installation in the private house is now entirely feasible.

Besides this, the soil absorption system will care for the waste from bath room, laundry, and slop sink as completely and as satisfactorily as the best city sewer. If economy is imperative, acetylene or gasolene may be substituted for the electric lights, or if electricity is used, the small machinery may be operated by electric motors.

This is actually being done on the farm now in Illinois, and I doubt not elsewhere. A few months ago our Engineering Experiment Station issued a bulletin on electric lighting in private houses. You will be interested to know that we have had more calls for this material, which was reprinted as a circular by the Agricultural Experiment Station, than for anything ever before issued, showing most significantly the direction of the drift of the public mind.

Here we have water pressure, bath and toilet room, a lighting plant, power laundry machinery, vacuum cleaner, with all that any city home can secure in the way of modern conveniences and more than can be had there, except with difficulty, for city residences commonly do not possess a source of power, — all this, as well as in the city and better.

I was amazed, optimist though I am, at the results of this investigation into the possibilities of the independent plant, and at what can be done, not in the future, but *now*, in the equipment of the farm home with the conveniences of human life.

But, you will say, think of the expense! Yes, it is costly; all good things are costly. Farm machinery is costly, especially a reaper that is seldom operated ten days out of the year and lasts on the average but three years. It is all costly, but remember that we are talking about a class of people who ride always in covered carriages, drive good horses, and are *able to go to town to live*.

Now an entire bath room outfit can be bought and installed for the price of a single covered buggy and will outlast the buggy half a dozen times over. The vacuum cleaner, that acme of comfort and luxury, will cost the price of a good horse or a medium team. Yes, it is costly. The whole outfit will cost a thousand dollars, perhaps twelve or fifteen hundred with the engine, depending upon the size and grade of the outfit.

Yes, *it will cost just about what a city building lot will cost* in any town worth living in and not on a principal street either. In other words, the moment the farmer moves to town to secure "modern conveniences," he "planks down" at the outset for a building site as much money as it would take to provide all these things and more on the farm he has left behind. Then, in addition, he will need to draw generous quarterly checks for water rates, gas bills, electric lights, and invest from two to three thousand additional for income to meet the extra cost of taxation.

Many of the choicest physical blessings are inherent in country life, such as good air, plenty of room, open sunshine, and comparative freedom from dangerously infectious

diseases. Others are being rapidly added, such as the telephone, which is both better and cheaper than in the city; the rural delivery of mail by which the farms are better served than are most towns, and the consolidated secondary school by which the farmer's children may receive literally from the father's roof the best education in the world.

When we have learned to build comfortable homes for ourselves and our children, then will the country be of all places for living the most delightful and the most desirable from the greatest variety of standpoints.

5. *The Country Beautiful.* Time and space are all too short for saying all that ought to be said about the human side of agricultural development, but I shall steal a word and a moment to enter a plea for the country beautiful; something to please the eye and uplift the soul; something beyond the body; something that shall foreshadow here what heaven may be hereafter.

First of all, I plead for the early evolution of a suitable country architecture: for house and barn exteriors that shall blend with the natural features of their surroundings. We build a barn on the ugliest lines that human ingenuity can devise, often "go the limits" by painting it red, and then wonder why it is so often struck by lightning.

Let the country house be built on good lines within and without. Let it be generously and hospitably big, with broad low roof and wide projection. Let it be surrounded by porches wide and deep; and inside, let the rooms be generous and the stairways broad. Let the colors everywhere be strong but soft, and outside let it blend into its setting of lawn and trees as if this home had been built in a spot which Nature had made expressly for the place where a family might live and where children might be

born and grow up and go out into the world to engage in and succeed in many things, but never to forget the childhood home of blessed memory.

This is a sentimental side of our business, I know, but after all, sentiment is the strongest thing in the world, and you and I may not know the racial asset of a dozen generations born and reared in such homes as may now be established on the farm.

It is traditional to assume a plain, hard life, destitute of comforts, for the family on the farm. In this we err. Nothing is farther from the essential. We cannot build and maintain a permanent agriculture on that proposition. In such an assumption we confuse the necessary hardships of the pioneer with the possibilities of the open country.

Farming and pioneering started off together, and the life of the pioneer farmer was hard, not because he was a farmer, but because he was a pioneer. Nature was unsubdued. Men and women were poor, and life was hard at the best when necessities were counted luxuries. But those days are over on real agricultural lands, and farming is coming into its own. There are non-agricultural lands where country life will continue hard, but this is not American agriculture. These are not farmers.¹

Look for American agriculture on agricultural lands and you will find it in any state of the Union. Here pioneering and farming have parted company forever. Farming will go its way on its own plan, and if you look for it here, you

¹ No greater mistake can be made than by assuming that every inhabitant of the country is a farmer. The man who lives in the hills and obtains a precarious living by a combination of hunting, fishing, and loafing is no more a farmer than is the peanut peddler on the street corner a merchant. Men are first of all countrymen and citizens from choice of habitation; after that comes the question of occupation. This is why the millions living wretchedly in the congested city can never be moved upon the land.

will find it a thousand years from now. I wonder what it will be like? The people then will be our descendants — yours and mine. I wonder what they will think of us, and how they will record history between now and then. I should like to be well thought of by them, for they ought to be a very superior people, and they will be if we are all wise, for what they are then will depend not a little upon what we do now.

Let us at once set about building country homes that shall last for generations. Let us give them plenty of room, with broad lawns and much grass. Let there be some flowers and shrubbery to add a touch of brightness, but above all, let there be *trees, trees, long-lived trees*, that will tell the children of the future that their grandfathers, who are we, took thought for them. Let the whole picture have its setting in a natural frame of forests and of hills, of fields where cattle be, of meadows and lakes and running water. So shall we build, and in this way also leave our best thoughts behind. So will the farm at last come into its own.

6. *The Country Educated.* I now come to the last, which is also the greatest of the separate features of agricultural development. I refer to the education and the culture of the men and women who shall live upon the land and till our soil — it is ours and not theirs — who shall think our thoughts as we cannot think them amid the stress and strain and struggle of the city; who shall keep the country as the great breeding ground where children may grow up into men and women without that prematurity and that dangerous sophistication that mark so many of the city born and bred.

This matter involves the whole philosophy of agricultural education, both of collegiate and secondary grade; in-

deed, it covers a large part of our educational effort, for it involves the education of nearly half our population.

Agricultural education is but a feature, albeit a large and important one, but none the less it is a feature of our system of universal education, and the spirit and purpose of our system of universal education, as I understand it, is this : so to educate all men as to make them first of all self-supporting and useful contributors to some feature—no matter what—of the public good ; and second, to encourage and develop in their several personalities the best that is in them as human beings and members of a rapidly advancing society whose capabilities, if not unlimited, are as yet unknown.

Universal education is an attempt to make the most not only of the exceptional man, but of all normal men, the masses of whom really represent the race and limit its achievements and advance. As nearly half the people live by farming, the problem of agricultural education shoulders approximately one half the problem of universal education, at least so far as numbers go ; moreover, it is the half that will have more than its share to do in fixing the future of all classes. How shall agricultural education be conducted so as to meet these broad requirements felt alike by farmers and all other members of our social body ?

First of all, agricultural education must be so conducted as to make the farmers efficient in a business way. It has taken more than a generation to begin to find all that is involved in this single feature of education for the business of farming, and few men yet realize that, of all forms of education, that in technical agriculture is the most costly if it is made good enough to be really worth while. The young man does not want to study *about* cattle : he needs to study cattle themselves ; a distinction not yet

observed, I am sorry to say, in some of our institutions of learning.

Young men who are fitting themselves for farming want not a mass of information about present day agricultural practice; that will pass, and it ought to pass. It is comparatively easy to teach, but it will be out of date and gone before it can serve a man now in school as a definite guide to procedure. What he wants from a business standpoint is instruction in the principles involved in agriculture so far as they are known and in methods of investigation after the unknown, that he may keep himself intelligent as this great business of agricultural development proceeds before his eyes day by day.

Furthermore, they want this, not in the university only, accessible merely to those who may go to college, but they want it and must have it in every high school, that it may be accessible from the home. They want it not in a few congressional district schools separated from everything else educational, but they want it wherever men from the country seek an education, and they want it associated with all the other subjects and where other men are educated. All this is extremely difficult for both teacher and student, and it involves an expense for skilled men, for equipment and for research, such as is not yet appreciated by anybody, much less by public men.

Teachers and investigators who have skill in this line are few and their services are extremely valuable, so valuable that the state which fills its quota with the best must stand ready to pay teaching salaries such as have never yet been paid. They must also devote money to equipment and facilities for research to an extent which makes all that has yet been done look microscopic and miserable—all this must be done if this development of agriculture is to pro-

ceed along all these lines as fast and as surely as it ought to proceed.

So much for the technical side: for what a man must know if he is to occupy the soil of the public domain to the best advantage to himself and to the state. Because of what I am about to say and lest I then be misunderstood, let me remark before passing, that I am a stickler for technical education both collegiate and secondary and for agricultural research of the most strictly technical character beyond anything that any man has ever yet dared to propose.

But that is not all. There remains a human side to agriculture. The farmer is not only a tiller of the soil; he is a man and a member of our permanent society; moreover, he is a voting member of the body politic. This is only another way of saying that as a man he possesses inherent privileges for himself and owes therefor substantial duties to the community quite outside and beyond the limits of his vocation and his education.

So I enter a protest against that philosophy of education and that system of schools which would by design or by necessity confine the education of a farmer or of any other man, industrial or non-industrial, to the limits of his vocational and business needs, and I protest against the establishment of separate agricultural schools in this country for the same reasons that I protest against the exclusion of the farmer from good society or from any other common interest of American development.

Every man is, or ought to be, bigger than his business. He does not and should not be so educated as to live for his business. He is in business that he may live, and the large question — the largest of all questions before any man — is, what shall he do with himself? what shall he do with the

result of his earnings? what shall he do with his leisure? how shall he justify his existence? He has a right to be so educated as to answer these questions, which are final; to be in business for something other than to conduct business or to while away the time.

A good part of the education of the farmer as of other men is, or should be, non-vocational, and of such character as shall best suit his individual tastes and surroundings. It will be history and economics for one, philosophy for another, language and the classics for a third, music, painting, or some other form of art for others — I care not what it is, provided it is something that develops human faculties outside vocational needs, and if only it serves to broaden rather than to narrow, which is the inevitable consequence of exclusive technical training.

I therefore enter a plea and a demand for the broadest possible views regarding agricultural education. The farmer as a man is not different from other men unless we make him so by our education, and if we do the time will come when other men of other classes will share with him the consequences of a shortsighted and inadequate system of education for industrial purposes.

A scheme for the education of farmers in separate schools is being industriously advocated in these days by a class of educators who seem to feel that a little education, and that almost exclusively technical, is sufficient for farming purposes, and that the European peasant school is a model. The advocates of this sort of school overlook certain important features of agricultural education and of the philosophy of education in general: they overlook the fact that the prospective farmer should be educated as a man as well as a farmer; in other words, that the farmer's, like every man's, education should include both the tech-

nical and the non-technical, both the vocational and the non-vocational.

They overlook the fact that we cannot safely educate separate professions in separate schools, for to do so is to build up distinct classes, each educated for and prejudiced in its own affairs and against the world.

They overlook the fact that there is a great body of knowledge that can form the background and the backbone of the education of all men for all pursuits, and that this is our chief reliance for holding our people together as one people.

They overlook the highly educational influence of mere association with other men as secured in universities which fit for all the affairs of life.

They overlook the capacity of the American secondary school still further to broaden its curriculum and widen its educational influence. This thoroughly unique American institution is abundantly able to reflect in its atmosphere and its class rooms the same cosmopolitan influence that constitutes the chief distinction of American universities.

They overlook the fact that our high schools are not "city schools" wholly given over to the affairs of the city. They are schools of the people in the best and highest sense of the term, willing and able to reflect all the major interests of the people of their respective communities, and to denominate as a "city school" every school in a village of 2000, and therefore, as a school where agriculture presumably should not be taught is, to say the least, un-American.

They overlook the fact that to establish separate agricultural schools of an inferior grade for country people would fail to serve with the education best suited to their

need that large element of the country-born that is not adapted to farm life.

They overlook the fact that the European system of education was evolved after distinct social classes had been established by generations of political and economic influences whose repetition in America it was the special purpose of our Puritan forefathers to prevent.

They overlook the fact that in America the country people have not yet been peasantized, but that so far we are a homogeneous people except for immigration, which is principally a city and not a country problem.

They overlook the fact that to educate farmers by themselves in separate schools almost purely technical and distinctly inferior both in breadth and intensity to the high schools in which other classes are educated—that to do this thing is to peasantize the farmers more rapidly and more completely than they were ever peasantized in Europe or than would be possible by any other method that could be devised by the ingenuity of man.

They overlook the fact that to peasantize the schools wherein farmers may be educated is to peasantize the farmers themselves, the first effect of which is to put them out of sympathy with other classes, and the other effect will be to limit their very ability as occupants and managers of the land and their economic efficiency as farmers, after which will be due and payable to men of all interests and all classes the social and political consequences of this proposed educational sin.

They overlook the fact that this sort of educational philosophy, extended to its conclusion, would demand that all men be educated exclusively to vocational ends, each class in its separate schools, out of touch and out of sympathy with the rights and ideals and ambitions of other classes,

the only final consequence of which is social chaos and political anarchy, because if our people are once broken up into classes according to occupation, they can never again be amalgamated.

They overlook what has been achieved in universities, wherein men of all conceivable purposes are educated both separately and together in a common atmosphere of democratic wholesomeness.

I would have Americans so educated that in a company you cannot tell by the dress, the language, or the manner of a man what his occupation is.

Agricultural Development a Public Investment

This development of American agriculture until it shall be profitable, productive, and permanent, and until the country shall be both comfortable and beautiful, and the people educated—all this will cost money, stupendous amounts of it, as we are accustomed to measure values in private life, for it means a reorganization and very largely a redirection of the lives, the purposes, and the achievements of at least a third of our great people.

If it were solely a matter of their own concern, we might leave them to provide for this development or let matters rest as they are. But in the last analysis the development of agriculture is a *public* question. The farmers are interested in it, of course, and for selfish reasons, but even if they were not interested, we should still insist for public reasons that our agriculture should be developed to the utmost. The farmers will reap the first advantages of such development, to be sure, but they can realize no advantage that is not shared with all interests of all people everywhere.

The farmers have developed the handicraft of farming, or the art of agriculture, if you please, about as far as experience alone can take it. What is needed now is the study and promulgation of the scientific principles involved in agricultural practice, and in this field experience may correct and help to shape results, but it cannot originate. This is the great work of the Experiment Station, as the education in these principles is the business of the college.

These institutions then stand in the very forefront of further agricultural progress, and the rate of this progress will depend upon the amounts of money which the public is willing to put into the effort, and the mutual inclination and ability of the colleges and the farmers to go along together.

Illinois, which has led the states in the amounts of public money devoted to the development of her agriculture, is devoting no less than \$317,000 to this purpose during the present biennium. This seems to be a large public outlay, but all things are relative. The way this compares with other public outlays, both productive and non-productive, is graphically shown in the following diagram.

By this we see that 23 per cent of the public outlay of Illinois is for the care of the insane, and that the state is putting into the development of its agriculture less than half as much as into the education and care of its defective children. By this we see that her state university as a whole is not yet on a level with her penal institutions; that is, that her penitentiaries are now absorbing a larger share of the public resources than are devoted to higher education and research in the university, and nearly as much as in the university and five normal schools combined.¹

¹ It is significant in this connection that Michigan has spent almost equal amounts of money since its admission to the Union on its great university at Ann Arbor and its penitentiary at Jackson.

COMPARATIVE PRODUCING AND NON-PRODUCING PUBLIC OUTLAYS, ILLINOIS, 1908-09	
Insane Hospitals, \$4,696,000 — 23 %	■
Penitentiaries, \$2,392,100 — 12 %	■
Dependents not defective, \$1,669,402 — 8 %	■
Defective Children, \$972,900 — 4½ %	■
Higher Education, \$2,783,264 — 14 %	■
Research and Development, \$978,140 — 4½ %	■
Agri'l Exper. Station, \$205,000 — 1 %	■
Agri'l College, \$112,000 — ½ of 1 %	■

By this we see that Illinois could increase her endowment for agriculture more than fifteen times and still devote less to the development of this great industry than it costs to care for her insane. By this we see, too, that 48 per cent of all her public outlay is for non-producing purposes.

Now the care of our dependents is a moral charge upon us and I would not shirk it, but it produces nothing and contributes nothing to development, and I propose a new plan—the dollar for dollar principle. I mean by this, *that every time we expend a dollar in charity or for non-productive purposes, we put down another dollar to develop the resources of the state.*¹

I wish I could in some vivid way impress upon the reader the enormous discrepancy in this respect at present and make him understand and appreciate how exclusively, almost, our public outlays are going into non-productive channels. If, for example, we denote the amount expended in Illinois for the College of Agriculture and for the work of the Experiment Station by the distance from Boston to Buffalo, then the amounts devoted to the care of the defective children on the same scale would reach from Boston to Salt Lake City; those for our prisoners would pass the western coast line and reach out into the Pacific and beyond the Hawaiian Islands, while the expense of the insane on the same scale would reach from Boston across our continent, across the Pacific, and into the heart of Mongolia in Central Asia; or if we should go to the east, it would land in almost the same spot, reaching, as it would, a little over halfway round the world.

If you combine all the expenditures for all non-productive dependents, it would reach around the world and over-

¹ See Address : The Development of the Natural Resources of the State, delivered at State Farmers' Institute, Peoria, February 12, 1908.

lap a thousand miles besides, against which our little distance from Boston to Buffalo as representing agriculture is not even a respectable Sabbath day's journey.

With comparisons such as these it is folly to say that a state cannot afford the most liberal support not only of college and station work for the development of its agriculture but for the development of all essential activities as well. Charity is commendable and in every way worthy, but after all it is non-productive, and money so expended is gone forever. Statesmanship dictates not only charity, but development.

Again, measured by the standard of production, these amounts are not large. The farmers of Illinois produce every day of the year, winter and summer, in sunshine or in rain, a million and a half of dollars of new wealth. These amounts represent less than a quarter of a day's work for each two years — a modest proportion, surely, to devote to this business of agricultural instruction and investigation, looking to the further development of our greatest producing industry. Yes, all things are relative, and it is proportions and needs rather than magnitudes that we must study.

Agricultural improvement is enormously productive, and money expended in its development is money not expended but money invested, for the returns are both enormous and perpetual. Every bushel per acre added to the yield of Illinois cornfields adds three million dollars to the income of the state. Every disease and every insect and fungous enemy which we learn to control saves enormous values to the country.¹

Every contribution to our knowledge of soil management is of direct public benefit as surely as are improved

¹ Bitter rot alone took a million dollars' worth of apples out of four counties of Illinois without warning in 1902.

methods of mining, and every step towards a permanent agriculture is a step along the road that must be traveled before we can talk about an assured future.

Measured by still another standard these outlays for the development of the agriculture of a state are not large. In this connection I quote as follows from the Peoria address already mentioned :—

“In order to emphasize the comparative uselessness of some of our small economies I am desirous of asking your attention to some of the items of the 628 million dollar appropriation for Federal purposes the current year. It may be of interest to remark in passing that these appropriation bills alone fill a large quarto volume of 574 pages, giving some idea of the magnitude of large things. I may add that the naval appropriation bill covers 54 pages of this volume, and the war department appropriations, including river and harbor improvement, cover 124 pages.

**CERTAIN FEDERAL APPROPRIATIONS FOR 1908¹ AND ILLINOIS'
SHARE² OF THE EXPENSE**

	Appropriation	Illinois' share ²
Total for the year	\$ 628,625,763	44+ millions
War department	176,116,606	12+ millions
Navy department	100,511,051	7+ millions
Rivers and harbors	43,000,000	3+ millions
Transportation of army	17,159,091	1½ millions
Indian affairs	10,464,384	\$ 750,000
Dam on the Rio Grande	1,000,000	70,000
Target practice, army	1,300,000	100,000
Ammunition, army	648,000	46,000
Agricultural department	9,447,290	670,000

¹ An increase of 70 per cent in ten years.

² On the basis of the fact that Illinois represents one fourteenth of the buying power as she does of its population.

	Appropriation	Illinois' share
Valuable seeds	\$241,633	\$17,000
Support Sioux Indians	622,000	45,000
Education Sioux Indians	200,000	15,000
Indian schools	4,173,680	300,000
U.S. penitentiaries	520,720	37,000
Insane hospital	305,800	22,000
Public schools, District Columbia . . .	2,424,609	173,000
National parks	628,165	45,000
229 post-office buildings	11,703,359	836,000
Smithsonian institution	1,593,116	113,000

"In all this I must not be misunderstood. I am not criticising the character or the magnitude of these appropriations. On the contrary, I am accepting them as embodying the broadest wisdom, and the ripest judgment of our most experienced men,—men who have learned by experience what it takes to build and maintain a nation. In my opinion we do well to imitate their example in state affairs, as we should certainly do were it not for our unfortunate and grossly inadequate means of raising revenue.

"Here is food for reflection and comparison with state affairs, particularly when we note the very large share that we of Illinois inadvertently play in the whole matter, and when we consider the fact that these amounts represent the result of long-continued experience with the larger relations of life and the deliberate judgment of what is needed to really conduct the affairs of a people.

"A few instances will help us better to realize what these large figures mean. For example, of the whole budget our share (over 44 millions) is more than the total outlay of the state for all purposes for over four years, and more than seven times what we raise by direct taxation for state purposes.

"Of the war department appropriation, our share (12 millions) is more than the entire outlay of the state of Illinois for the same length of time, and our share of the war and navy together is twice as much.

"We are just informed¹ that the military estimates before the present Congress aggregate 427 millions, or more than half the visible Federal revenues. Our share of this alone would be over 30 millions. It is only in this way that you realize what it really costs to maintain the big stick, even in time of peace. And yet what are you going to do about it? Are we going to abolish the big stick and let somebody run away with us some fine day? Those who ought to know most about it say 'no.' The estimate for building and converting war vessels next year is 74 millions, our share of which would be over five millions. Thirty-eight millions of this is for four new battleships, — at nine and one half millions apiece. Evidently something must be done when we remember that every boat in Admiral Evans's fleet going to the Pacific was built since the Spanish war. Even the famous *Oregon* is out of date now and near the junk heap.

"Everybody knows that we have no military force worth mentioning in comparison with the great standing armies of the world. Yet it costs something to maintain it. The appropriation of the war department is about evenly divided between 'public works' and 'military establishment' which represents the army expenditures. This latter is something over 80 millions for the current year, our share of which is almost the same as our total state tax for the same time.

"Seventeen millions are needed this year for transportation of the army. Our share of this is nearly one and a quarter millions, which is more than we put into the State

¹ *Chicago Tribune*, February 7, 1908.

University and all the research work of the state combined for the same length of time.

"Our share of the cost of the target practice of this army is \$100,000 a year, which is as much as the state was willing to put into a chemical laboratory for the instruction of our present 4000 students and others still to come.

"Indian affairs cost us three quarters of a million a year, or nearly twice our support of the Normal schools. Now I am for the Indians, from whom we have gotten a lot of raw material and no little experience. But I am for Illinois people too. Do you know that our share of the cost of Indian schools is \$300,000 a year, or a good deal more money than this state is putting into the development of its agriculture?

"Do you know that we are not putting as much money into the study of soils and crops combined as our share of the cost of ammunition for the army in these piping times of peace? (\$46,000.)

"I am prepared to maintain before any tribunal that we ought to put as much money into the study of Illinois soils as our share of the support of the Sioux Indians (\$45,000). Isn't that a fair proposition?¹ But if you do it you will do almost what this Association asked and double the present appropriation.

"Besides the support of the Sioux Indians our share of their education is \$15,000 a year, which is the exact amount you are putting into the development of the dairy interests of the state.

"We have all heard of these new and valuable seeds that come in little packets about planting time bearing the local

¹ The Farmers' Institute, before whom this address was read, had asked that the annual appropriation for the study of Illinois soils be increased from \$25,000 a year to \$50,000. The request was denied at that time, but the session just closed has made the amount \$60,000.

congressman's frank. Do you know that our share of the cost of these stock seeds is over \$17,000 a year, which is about what you are putting into the horticultural development of the state?

"Now the District of Columbia is Federal territory, and there are children there to be educated. Our share of the cost of these public schools is \$173,000 a year, or more than you appropriate to the agricultural college and experiment station combined.

"The Federal appropriations to the agricultural department of Washington are nearly nine and one half millions of dollars.¹ Your share of this is no less than the sum of \$670,000. Now this is more money than was ever appropriated per annum to the State University before the last session of the General Assembly, and it is more than four times what you appropriate for the agricultural college and the experiment station both.

"Is there any reason why Illinois cannot afford to put as much money into the development of the agriculture of the state as her share of the cost of maintaining the Federal department of agriculture? Can she afford not to do it? Russia is the best modern example of a people that was taxed for generations for central purposes without regard to local development, and we find that they have already reached the limit of taxing power and are going backward.

"We in this country feel as yet no burden of taxation. That is because the cost of our military is small, and because we have a great body of virile people engaged in productive industry in a new country. But our population has doubled four times in the last hundred years. If it

¹ At the present writing over 16 millions; and "Illinois' share" of the appropriations of the last Congress is, on the basis of this calculation, some 135,000,000 dollars.

should continue at that rate another hundred years, we shall have in this country more than a thousand millions of people.¹ How many of them will be insane, how many penal, how many defective? What will be their power to earn money, pay taxes, and take care of themselves? There will be no scarcity of labor then. The problem will be one of maintenance and world supremacy in food and trade. *What they can do then will depend much on what we do now*; whether we establish and maintain policies that shall put adequate amounts into development of our productive resources in men and materials, or whether while our country is new we allow ourselves to drift. Think on these things and decide whether you will make a policy of your own in this matter, whether you will depend upon Federal authority to do it for you, or whether you will go on without one. If I do not misjudge the character and temper of Illinois people, I will predict you will make a policy yourselves, and take a little more of your own money, keep it at home, and develop the state, to the end that its earning power shall be increased and the burden of taxation grow less instead of greater as generations come and go.

“Yes, in every way money expended for agricultural development is not an outlay, it is money invested in the safest bank on earth—the soil of the commonwealth and the people on whom we must depend for its management and in whom the balance of power will always rest. Cannot any state afford to devote as much to its agriculture as to its prisoners? Can it afford not to do it?

“They cannot afford not to do it, first, because agriculture needs it, and second, because the development of our

¹ Theoretically about fourteen hundred millions.

producing industries and of the productive powers of the people is the best protection against the crushing burden of non-producing dependents as it is the best guaranty for the future. I therefore close with the thought of dollar for dollar; that is, a dollar for development against every dollar needed for charity. As a corollary to this proposition and in behalf of agriculture, I propose as a temporary policy that as much be devoted to the development of our agriculture as to the support of our penitentiaries.

"I beg of you, my reader, in the strongest terms, to study these questions in all their meaning, both now and in the future. And when you see their full significance and real bearing, be outspoken and insistent that our commonwealth at once adopt policies that shall put agriculture on a safe and progressive basis both economically and educationally.

"This is agricultural development and the meaning of it."

The words just quoted are still true, and the development of American agriculture is to be a large factor in our affairs, for it will absorb the energies and shape the lives of at least one third of our population. The education of so large a mass is a tremendous problem, not only because its character so directly decides the weal or the woe of so many people, but because the development of agriculture and her people indirectly affects all the people of all classes everywhere. It is fitting therefore that all classes interest themselves in agricultural progress, for it is after all a public and not an individual question.

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